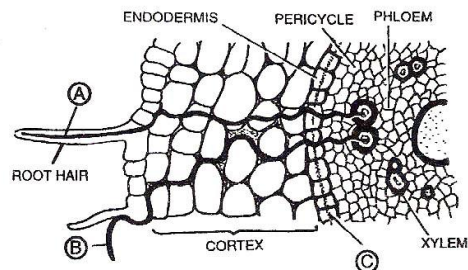


TRANSPORT IN PLANTS

1. The rate of water absorption decreases when the soil temperature is
 - (a) 0°C
 - (b) above 15°C
 - (c) between 0-5°C
 - (d) above 15-25°C
2. A water-logged soil is considered to be physisologically dry because of
 - (a) decreased viscosity of water
 - (b) increased viscosity of water
 - (c) abundance of salts
 - (d) anaerobic conditions
3. Which is influenced by opening and closing of stomata?
 - (a) active water absorption
 - (b) passive water absorption
 - (c) both (a) and (b)
 - (d) rate of growth
4. The influence of metabolic inhibitors on the process of passive absorption of water is
 - (a) little and that too indirect
 - (b) little and direct effect
 - (c) strong and indirect
 - (d) strong and direct
5. The process of absorption of water which depends upon the loss of water vapours due to transpiration is
 - (a) both passive and active absorption
 - (b) active absorption
 - (c) passive absorption
 - (d) none of the above
6. The absorption where energy is not required and the root play only the role of absorbing organs is called
 - (a) active absorption
 - (b) passive absorption
 - (c) both passive and active absorption
 - (d) none of the above
7. Root pressure can be measured by means of
 - (a) Porometer
 - (b) Potometer
 - (c) Auxanometer
 - (d) Manometer
8. When soils are deficient in oxygen and have high proportion of salts or toxic substances the process of active absorption
 - (a) increases
 - (b) remains unaffected
 - (c) decreases
 - (d) stops
9. The energy source that drives the upward flow of water is
 - (a) light
 - (b) source
 - (c) solar heat
 - (d) ATP
10. Who demonstrated that the ascent of sap occurs due to the pulsatory activity of innermost cortical cells?
 - (a) Janse (1887)
 - (b) J.C. Bose (1923)
 - (c) Strasburger (1891)
 - (d) Molisch (1928, 29)
11. The plant tissue specialized for vertical transport belongs to
 - (a) xylem and phloem
 - (b) xylem and phloem
 - (c) medulla and cortex
 - (d) phloem and cortex

12. The term tensile strength represents that
- there is a strong cohesion force between water molecules, so the column does not break and it is stretched by transpiration pull
 - there is a strong adhesion between water molecules and walls of xylem vessels so the column does not break and it is stretched by transpiration pull
 - there is absence of vacuoles in the vessels, so the column does not break and it is stretched by transpiration pull
 - there is loss of water by leaves, so a positive tension is created and column does not break and it is stretched by transpiration pull
13. In a branch cut from a rapidly transpiring plant, water snap ways from the cut end, if shows that
- it is under tension
 - it is in excess in vessels
 - it has been absorbed by capillary force
 - it has been absorbed by immbibition force
14. Ascent of sap could take place in
- apoplast
 - symplast
 - cortex is root
 - phloem cells

15. In the given TS of root, what part A, B and C are?



- A - Symplast, B - Apoplast, C - Casparian strip
 - A - Apoplast, B - Symplast, C - Endoermis
 - A - Vaculoar path, B - membrane pathway, C - pericycle
 - A - Transmembrane, B - Capillary, C - Endodermis
16. Ringing experiments are performed to demonstrate
- the ascent of sap through both phloem and xylem
 - the ascent of sap through xylem
 - the ascent of sap through cortical cells
 - the ascent of sap through phloem and xylem parenchyma
17. When an oak tree is kept in a poisonous solution, that rises to the top of the tree, even then the tree is ready to take another supply of poisonous solution followed by uptake of even pure water. This show that
- living cells are not involved in ascent of sap
 - living cells play a major role in ascent of sap
 - both xylem and phloem play a major role is ascent of sap
 - living cells play 60% role and vessels of xylem play 40% role in ascent of sap

18. Which contributes most to the transport of
 - (a) Root pressure
 - (b) cohesion of water and transpiration pull
 - (c) capillary rise of water inside xylem
 - (d) Hydrolysis of ATP
19. Transpiration is mainly a process of
 - (a) osmotic potential
 - (b) imbibition
 - (c) diffusion
 - (d) respiration
20. Stomata controls the exchange of
 - (a) water vapour only
 - (b) water vapour and CO₂
 - (c) CO₂ only
 - (d) other gases only
21. The most effective light for stomatal opening is
 - (a) green
 - (b) yellow
 - (c) blue
 - (d) red
22. Presence of stomata on the undersurface of dorsiventral leaf will
 - (a) reduced the rate of transpiration
 - (b) properly regulate the transpiration
 - (c) protect the leaf from dust
 - (d) increases the rate of transpiration
23. The most important factor affecting transpiration in inverse proportion is
 - (a) wind
 - (b) light
 - (c) temperature
 - (d) humidity
24. Psychrometer is meant for the measurement of
 - (a) temperature
 - (b) relative humidity
 - (c) rainfall
 - (d) wind velocity
25. Mechanism of stomata action is due to the reversible absorption and loss of
 - (a) sodium
 - (b) potassium
 - (c) calcium
 - (d) iron
26. The stomatal movement can be explained through ion-exchange controlled osmotic changes in guard cells. The ions involved in the exchange are
 - (a) $\text{Cl} \rightleftharpoons \text{Mn}^{++}$
 - (b) $\text{H}^+ \rightleftharpoons \text{K}^+$
 - (c) $\text{Cu}^{++} \rightleftharpoons \text{Mn}^{++}$
 - (d) $\text{Cu}^{++} \rightleftharpoons \text{Mg}^{++}$
27. Differential thickening in the guard cells is absent in case of
 - (a) Apple
 - (b) Azolla
 - (c) Maize
 - (d) Sunflower
28. Guard cells differ from epidermal cells in having
 - (a) mitochondria
 - (b) vacuoles
 - (c) cell wall
 - (d) chloroplasts
29. Loss of water by cells without external sign of leaf drooping is known as
 - (a) nascent wilting
 - (b) temporary wilting
 - (c) incipient wilting
 - (d) permanent wilting
30. Wilting in plants occurs when
 - (a) phloem is blocked
 - (b) transpiration is increased
 - (c) pith is removed
 - (d) xylem is blocked
31. Permanent wilting can be overcome by
 - (a) increasing relative humidity
 - (b) supplying water to the soil around the plant
 - (c) supplying antitranspirants
 - (d) all of the above
32. Plants growing on hills show
 - (a) higher rates of transpiration
 - (b) lower rates of transpiration
 - (c) same rate of transpiration as in plants
 - (d) lower rates of transpiration provided the stomata are sunken

33. The hormone which controls the outflow of potassium from guard cells is
 (a) IAA (b) Gibberellins
 (c) ethylene (d) abscisic acid
34. The hormones which help in the intake of K^+ ion by guard cells and hence speed up the opening of stomata are
 (a) cytokinins (b) auxins
 (c) gibberellins (d) ethylene
35. Guttation is manifestation of/ mainly due to
 (a) high root pressure
 (b) osmosis
 (c) transpiration
 (d) imbibition
36. Loss of water and dissolved salts (exudation) from the tips of leaves through hydathodes as droplets of water is known as
 (a) evaporation (b) transpiration
 (c) condensation (d) guttation
37. Antitranspirants
 (a) reduced the rate of transpiration without affecting carbon assimilation
 (b) reduce the rate of transpiration affecting carbon assimilation
 (c) reduce the rate of transpiration affecting growth of plant
 (d) reduce the rate of transpiration affecting protein synthesis of plant
38. One of the following is an antitranspirant but its effect persists only for a few hours?
 (a) Phenyl mercuric acetate
 (b) Absciscic acid
 (c) Malic acid
 (d) Silicon emulsions
39. In succulent plants, the stomata open night and close by day. Which among the following would be best hypothesis to explain the mechanism of stomatal action in night only?
 (a) CO_2 accumulates, reduces pH, stimulates enzymes resulting in accumulation of sugars
 (b) increases in CO_2 concentration, conversion of organic acids into starch, resulting in the increased conversion into sugar insulating in K^+ transport
 (c) Low CO_2 concentration due to utilization, accumulation of organic acids resulting in the increased concentration of cell sap
 (d) CO_2 used up. Increases pH, results in accumulation of sugars
40. Frequency and position of stomata can be determined by
 (a) cobalt chloride paper
 (b) photometer
 (c) porometer
 (d) measuring water loss
41. Which wall of the guard cell is thick?
 (a) lateral
 (b) inner (ventral concave)
 (c) outer (dorsal convex)
 (d) all of these
42. In CAM plants, stomata are
 (a) never open
 (b) always open
 (c) open during day and close at night
 (d) open during night and close during the day
43. Glycolate induces opening of stomata in
 (a) presence of O_2
 (b) low CO_2 concentration
 (c) high CO_2
 (d) CO_2 absent

44. Transpiration occurs due to presence of

- (a) O₂ (b) Ozone
(c) CO₂ (d) H₂

45. Which one of the following during water stress and causes stomatal closure?

- (a) Absciscic acid (b) Auxin
(c) Cytokinin (d) Gibberellin

46. The cut flowers are dipped basally in dilute sodium chloride solution to

- (a) reduce bacterial growth
(b) reduce transpiration
(c) induce endosmosis
(d) increase solute concentration

47. Match the Column - I with appropriate items of Column - II

Column - I

A. Stomata

B. Hydathode

C. Root hair

D. Xylem vessel

E. Subsidiary cell

Column - II

i. ascent of sap

ii. Absorption of water

iii. Transpiration

iv. Guttation

v. K⁺

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

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

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

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

48. Common between guard cells and mesophyll cells of leaf is

- (a) both are dumbbell shaped
(b) differentially thick walled
(c) green
(d) uniformly thin walled

49. If concentration of CO₂ in atmosphere is increased, the stomata are closed in

- (a) dark (b) light
(c) both in dark and light (d) none of the above

50. Stomatal index 'I' is equal to

(a) $\frac{S}{E-S} \times 100$

(b) $\frac{S}{E+S} \times 100$

(c) $\frac{E}{E+S} \times 100$

(d) $\frac{E+S}{E} \times 100$

ANSWERS KEY

1	A	11	A	21	B	31	D	41	B
2	D	12	A	22	A	32	A	42	D
3	B	13	A	23	D	33	D	43	B
4	A	14	A	24	B	34	A	44	C
5	C	15	A	25	B	35	A	45	A
6	B	16	B	26	B	36	D	46	C
7	D	17	A	27	B	37	A	47	D
8	D	18	B	28	D	38	B	48	C
9	C	19	C	29	C	39	C	49	C
10	B	20	B	30	B	40	C	50	B