EXERCISE-I

Means of Transport

1. Which of the following cells have more extensible walls
(A) Vessels (B) Tracheids
(C) Seive tubes (D) Fibres

2. Mycotoplasm can be considered as a system consists of
(A) Cytoplasm of sieve tube
(B) Vacuole of sieve tube
(C) Cytoplasm and vacuole for a system
(D) None of these

3. Young sieve tubes resemble
(A) Mycoplasma (B) Slime body
(C) Golgi body (D) None of these

4. Which of the following cells have comparatively narrow lumen
(A) Vessels
(B) Sieve tubes
(C) Equal in both
(D) Vessels have no lumen

5. Which one of the following doesn't help in molecule transport
(A) Diffusion (B) Osmosis
(C) Surface tension (D) Active transport

6. Root cap has no function in water absorption, because
(A) Its vascular system is not directly connected
(B) Its cells are loosely placed
(C) It has cells without chloroplast
(D) It has no root hair

7. Plant cells do not burst in distilled water, because
(A) Cell wall is elastic, rigid and get stretched
(B) Cell wall is living
(C) Cell wall is the outer most layer of plant cell
(D) Cell wall is permeable

8. Meaningful girdling (Ringing) experiments cannot be done on sugarcane because
(A) Phloem is present inside the xylem
(B) It can not tolerate the injury
(C) Vascular bundles are scattered
(D) Plants are very delicate

9. The amount of water held by the soil after drainage is known as
(A) Mineral water
(B) Soil water
(C) Field capacity
(D) Gravitational capacity

10. Some leaves are removed from the stem cuttings planted for vegetative propagation. This is done
(A) To increase water uptake
(B) Because it helps in rooting of cuttings
(C) To reduce water loss
(D) Because the cuttings need less food

11. The water conducting part of plant is also called
(A) Hadrom (B) Leptom
(C) Bast (D) All the above

12. Which is not involved in entry of water through suberized roots
(A) Lenticels, wounds and breaks around branch roots
(B) Roots and root hairs
(C) Root cap
(D) (A) and (C) both

13. Holding capacity is highest in
(A) Clay soil (B) Lome soil
(C) Silt soil (D) Sandy soil

14. Which constitutes an apparent free space
(A) All dead cells
(B) Intercellular spaces
(C) Cell wall spaces
(D) All together

15. Which tissues are removed when a plant is girdled
(A) Xylem and pith (B) Xylem and phloem
(C) Phloem to epidermis (D) Phloem to pith

16. The cohesive force of water is due to
(A) *O* bonds (B) *H* bonds
(C) *OH* bonds (D) *S* bonds

17. Attractive forces of cell walls for water molecules is termed as
(A) Adhesion (B) Cohesion
(C) Osmosis (D) Plasmolysis

18. Lenticels and hydathodes are small pores with following common attributes
(A) Their opening and closing is not regulated
(B) They allow exchange of gases
(C) They always remain closed
(D) They are found on the same organ of plants

19. Starch is insoluble in water, yet it is accumulated in large quantities in potato tuber because
(A) It is useful for storage
(B) Tubers respire slowly
(C) Starch is synthesized in tubers
(D) Translocated sucrose is polymerized here

20. Good soil is
(A) Which holds whole of the water that enters into it
(B) Which allows percolating the water slowly from it
(C) Which allows water to pass very quickly from it
(D) Which allows limited amount of water to retain into it

21. A cell placed in strong solution will shrink because
(A) Cytoplasm will decompose
(B) Mineral salt will break the cell wall
(C) Salt water enter the cell
(D) Water comes out by exosmosis

22. A cell increases in volume if the external medium is
(A) Hypotonic (B) Hypertonic
(C) Isotonic (D) None of these

23. In osmosis solvent flows from
(A) Lower concentration to higher concentration of solvent
(B) Higher concentration of solvent to lower concentration of solvent
(C) One cell to another
(D) None of the above

24. If a cell is reduced in size on placing in a solution of sugar, the solution is
(A) Hypertonic (B) Hypotonic
(C) Isotonic (D) Saturated

25. All the following involves osmosis except
(A) Water from soil entering a root hair
(B) Water passing from root hair to adjacent cells
(C) Water passing up a xylem vessel element to xylem vessel element above it
(D) Water entering a mesophyll cell from xylem vessel element

26. Freshly cut potato slice is put into strong solution of sugar, later its cells found to be
(A) Flaccid
(B) Turgid
(C) Longer
(D) More full of starch

27. An example of selectively permeable membrane can be best deduced from the passage of water and mineral salts from
(A) Soil into root hair
(B) Root hair into cortical cell
(C) Pericycle cells into tracheal elements
(D) Cortical cells in the pericycle

28. An example of selectively permeable membrane is
(A) Plasmalemma
(B) Cell wall
(C) Mitochondrial membrane
(D) Chloroplast membrane

29. Plasma membrane controls
(A) Passage of water
(B) Passage of water and some solutes in and out of the cell
(C) Passage of water and solutes into the cell
(D) Movements of the cell contents out of the cell

30. A cell is plasmolysed after being kept in a hypertonic solution. What will be present between cell wall and plasmalemma
(A) Isotonic solution
(B) Hypertonic solution
(C) Air
(D) Hypotonic solution

31. Osmosis is helpful to plant because
(A) Growth of the young cells is brought about by osmotic pressure and turgor pressure of these cells
(B) Certain turgor moments in plants are determined by osmosis
(C) Both (A) and (B)
(D) None of these

32. Osmosis can be demonstrated by
(A) Potato osmoscope
(B) Ganong's respiroscope
(C) Microscope
(D) All the above

33. Permanent wilting percentage is that amount of water in the soil at which
(A) Plant remain normal
(B) Plant show vigorous growth
(C) Plant is permanently wilted
(D) Plant undergoes temporary wilting

34. The plant undergoes wilting when
(A) Xylem is blocked
(B) Cambium is blocked
(C) Phloem is blocked
(D) Some roots are reduced in number

35. In some plants, the leaves drop down during day while become normal during night
(A) Due to temporary wilting
(B) Permanent wilting
(C) Both (A) and (B)
(D) None of the above

36. Wilting of a plant results from excessive
(A) Respiration (B) Photosynthesis
(C) Absorption (D) Transpiration

37. Wheat grains before germination absorb water by
(A) Endosmosis (B) Exosmosis
(C) Plasmolysis (D) Imbibition

38. Percentage of water left in the soil when a plant wilts, is known as
(A) Turgidity
(B) Field capacity
(C) Water retaining power of the soil
(D) Wilting coefficient

39. Cells absorb water by
(A) Osmosis
(B) Osmosis and imbibition
(C) Imbibition alone
(D) Diffusion

40. Water moves across a selectively permeable membrane

	FROM	TO
(A)	Region of higher water-potential	Region of lower water potential
(B)	Lower water concentration	Higher water concentration
(C)	Higher solute concentration	Lower solute concentration
(D)	Region of higher osimotic potential	Region of lower osmotic potential

41. In seed germination, the first phenomenon takes place is
(A) Diffusion (B) Osmosis
(C) Imbibition (D) All the above

42. In the process of osmosis
(A) Both protoplasm and cell wall act as a single layer
(B) Only protoplast acts as a single layer
(C) Only cell membrane acts as a single layer
(D) None of the above

43. Absorption of water by gram is the process of
(A) Diffusion (B) Imbibition
(C) Endosmosis (D) Exosmosis

44. Osmosis is the property of
(A) Solutes
(B) Solutions
(C) Semipermeable membrane
(D) Solvent

45. Osmosis involves
(A) Cell to cell movement of water
(B) Movement of water through cortical cells
(C) Active absorption of water through roots
(D) All the above

46. The initial stage of water absorption by root cells is by
(A) Adsorption (B) Absorption
(C) Osmosis (D) Imbibition

47. Process of osmosis shall cease when
(A) Solutions become isotonic or DPD becomes equal
(B) Water concentration becomes equal
(C) There is no light
(D) The level of water falls

48. How the molecules of water would behave if pure water is separated from a colloidal suspension with the help of a selectively permeable membrane. It would cause a net movement of water to
(A) Colloidal side (B) Water side
(C) Either side (D) Neither side

49. Why osmosis cannot be demonstrated by a potato osmoscope using a solution of *NaCl* instead of sugar; because the potato tissue is
(A) Permeable to *Na* ion
(B) Permeable to *Cl* ion
(C) Permeable to salt solution
(D) Impermeable to salt solution

50. Deplasmolysis occurs in a cell when it is placed in
(A) Hypotonic solution
(B) Hypertonic solution
(C) Isotonic solution
(D) Buffer solution

51. In the process of osmosis, volume of solvent
(A) Increases
(B) Decreases
(C) Remains same
(D) Volume is not related in osmosis

52. To initiate cell plasmolysis, the salt solution should be
(A) Isotonic (B) Hypertonic
(C) Hypotonic (D) None of the above

53. Osmosis is defined as the process in which
(A) Water diffuses from lower concentration to higher concentration
(B) Solutes diffuse from lower concentration to higher concentration
(C) Active transport of ions takes place
(D) Passive transport of ions takes place

54. Plant cells submerged in distilled water will become
(A) Turgid (B) Flaccid
(C) Plasmolysed (D) Impermeable

55. The plants face wilting due to use of excessive fertilizers because of
(A) Exosmosis (B) Endosmosis
(C) Imbibition (D) None of these

56. Dry wooden stakes, if driven into a small crack in a rock and then soaked, can develop enough pressure to split the rock. Such pressure is build up through the phenomenon of
(A) Imbibition (B) Deplasmolysis
(C) Turgor pressure (D) Osmotic pressure

57. Due to plasmolysis, the plant cell
(A) Bursts (B) Swells up
(C) Becomes turgid (D) Becomes flaccid

58. In rainy season, the doors get wet due to
(A) Imbibition (B) Absorption
(C) Diffusion (D) Endosmosis

59. When a potato piece is kept in a highly concentrated salt solution, then
(A) Potato is plasmolysed
(B) Potato is deplasmolysed
(C) Potato cells get bursted
(D) There is no effect due to isotonic solution

60. What would happen if a thin slice of sugar beet is kept in *NaCl*
(A) It should lose water from the cell
(B) It should become turgid
(C) It should neither absorbed water nor lose it
(D) It should absorb water from the soil solution

Plant-Water Relations

61. When the mesophyll cells lose water their DPD
(A) Increases
(B) Decreases
(C) Remain constant
(D) None of the above is applicable

62. The turgor pressure of a turgid cell is equal and opposite to
(A) Root pressure (B) Wall pressure
(C) Diffusion pressure (D) All the above

63. When osmotic potential is either zero or negative and pressure potential is positive, then the water potential will be
(A) Negative
(B) Positive
(C) Sometimes negative and sometimes positive
(D) None of the above

64. Water potential is affected by
(A) Osmotic potential (B) Matric potential
(C) Pressure potential (D) All the above

65. Which of the following may be called as imbibition pressure
(A) Water potential (B) Chemical potential
(C) Matric potential (D) None of the above

66. The cell is fully turgid when
(A) DPD = TP (B) OP = DPD
(C) DPD = SP (D) DPD = zero

67. Under given suitable conditions, the DPD will be more than OP
(A) When OP is equal to TP
(B) When OP is less than TP
(C) When OP is greater than TP
(D) When TP is negative

68. You are given three cells, a root hair, a cell of the inner cortical layer and a cell of the mesophyll.
Arrange them in the ascending order of DPD
(A) Root hair < Cortical cell < Mesophyll
(B) Cortical cell < Mesophyll < Root hair
(C) Mesophyll < Root hair < Cortical cell
(D) Root hair < Mesophyll < Cortical cell

69. What is the direction of the movement of water if two cells have the same OP but differ in TP
(A) No net flow
(B) From lower TP to higher TP
(C) From higher TP to lower TP
(D) Data insufficient

70. Water potential can be obtained by
(A) $OP + TP$ (B) $OP = WP$
(C) $P + \pi$ (D) $OP - DPD$

71. When osmotic pressure becomes equal to the wall pressure, then
(A) The flow of water will be inside the cell
(B) The flow of water will be outside the cell
(C) Both flow will occur inside as well as outside
(D) There will be no flow

72. What is the direction of the net movement of water between two cells *X* and *Y* if the DPD of *X* is lower than *Y*
(A) *X* to *Y* (B) *Y* to *Y*
(C) Out of *X* (D) No net movement

73. 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

74. The water potential and osmotic potential of pure water are
(A) 100 and zero (B) Zero and zero
(C) 100 and 200 (D) Zero and 100

75. When a cell is fully turgid, which of the following will be zero
(A) Wall pressure (B) Osmotic pressure
(C) Turgor pressure (D) Water potential

76. An ideal molar solution at 0°C will have an osmotic pressure of
(A) 10 atmosphere (B) 20 atmosphere
(C) 22.4 atmosphere (D) 4.3 atmosphere

77. If a plant is immersed in water, the water continues to enter the cell until the
(A) Concentration of the salt is the same inside the cell as outside
(B) Cell bursts
(C) Diffusion pressure of water is the same inside the cell as outside
(D) Concentration of water is the same inside the cell as outside

78. 0.1*M* solution of a solute has a water potential of
(A) –2.3 bars (B) 0 bar
(C) 22.4 bars (D) + 2.3 bars

79. When water moves through a semipermeable membrane, which of the following is created
(A) *OP* (B) *SP*
(C) *TP* (D) *WP*

80. Addition of a solute to pure water causes
(A) Negative water potential
(B) More negative water potential
(C) Positive water potential
(D) More positive water potential

Long Distance Transport of Water

81. In plants, xylem of roots greatly perform in water uptake which involves
(A) Only non-living cells
(B) Both living and non-living cells
(C) Only living cells
(D) None of these

82. Bordered pits relating with water uptake located in
(A) Cortex
(B) Endodermis
(C) Vessel elements (Xylem duct)
(D) Tracheary elements

83. A plant with well washed roots was placed in a beaker of water diluted with red ink. The red colour travelled up the stem and into the leaf veins. Which of the following is the explanation of the uptake of red ink into the roots
(A) The red ink entered the root hairs by osmosis
(B) The molecules of red ink diffuse into the root hairs
(C) The membranes of the root hairs were destroyed and red ink could enter
(D) The molecules of red ink passed from a region of low concentration to one of high concentration

84. In water logged soil, plants generally are killed because of
(A) Deficiency of minerals
(B) Excessive absorption of water
(C) Absence of air in the soil
(D) Starvation

85. Which of the following helps in the absorption of water and mineral salts
(A) Mycorrhiza (B) *Anabaena*
(C) *Nostoc* (D) None of these

86. Exudaton of xylem is due to
(A) Passive absorption
(B) Root pressure
(C) Guttation
(D) Present of transpiration

87. The movement of water from one cell of the cortex to the adjacent one in roots is due to
(A) Accumulation of inorganic salts in the cells
(B) Accumulation of organic compounds in the cells
(C) Chemical potential gradient
(D) Water potential gradient

88. In soil, water available for plants is
(A) Capillary water
(B) Hygroscopic water
(C) Gravitational water
(D) Chemically bound water

89. By what mechanism does water moves through vessels and tracheids of root stem and leaves
(A) Osmotic flow (B) Bulk flow
(C) Gravity flow (D) Imbibition

90. When cut end of a shoot is placed in a solution of saffranin. The presence of dye could be located in
(A) Cortex (B) Tracheid elements
(C) Phloem (D) Pith

91. In plants water ascends through
(A) Guttation (B) Only transpiration
(C) Transpiration pull (D) All the above

92. The transport of water and salts takes place through
(A) Phloem (B) Xylem
(C) Sieve tubes (D) Sclerenchyma

93. The direction of water in the leaflets of *Cycas* from midrib is
(A) Lateral
(B) Downward
(C) Upward
(D) Downward and upward

94. Energy does not require in
(A) Passive uptake of water
(B) Active uptake of water
(C) Ascent of water
(D) None of these

95. By which of the following active uptake of water is affected
(A) Transpirational power of the root hairs
(B) Typical tissue organization
(C) Tension due to transpiration
(D) Osmotic concentration of the cell sap of the leaves

96. The adhesive property of water is
(A) Attraction between the water molecules
(B) Dettachment between the water molecules
(C) Viscosity between the water molecules
(D) Spliting (breaking) of water molecules

97. The continuity of water column in xylem is maintained due to
(A) Presence of air bubbles
(B) Cohesive property of water
(C) Evaporation power of water
(D) None of these

98. In active absorption of water in plants the metabolic energy is supplied by
(A) Photosynthesis
(B) Respiration (from cell)
(C) From soil water
(D) All the above

99. When root pressure is more, which of the process will be rapid
(A) Absorption (B) Transpiration
(C) Respiration (D) None of the above

100. Ascent of sap is due to which force
(A) Imbibition
(B) Cellular force
(C) Cohesive force
(D) Atmospheric pressure

101. Absorption of water by root is increased by
(A) Increase in transpiration
(B) Increase in the rate of photosynthesis
(C) Decrease in transpiration
(D) Decrease in salt uptake

102. According to Sachs theory, the ascent of sap takes place
(A) In xylem ducts with the help of imbibition
(B) In the phloem with the help of imbibition
(C) In pith with the help of imbibition
(D) All of the above

103. The soil is said to be physiologically dry when
(A) It has no hygroscopic water
(B) The concentration of soil solution is higher than inside roots
(C) Soil temperature is 0° *C*
(D) In (B) and (C) cases

104. Many transplanted seedling may not survive because
(A) They do not like the new soil
(B) They do not get required mineral salts
(C) Most of the root hairs are lost during transplantation
(D) The leaves get damaged

105. Which soil is most suitable to water uptake
(A) Sandy soil (B) Clay soil
(C) Loamy soil (D) None of these

106. In many epiphyte (Orchid) plants which tissue is present in cortex of root and helps in water uptake
(A) Velamen (B) Cork cambium
(C) Pericycle (D) Medullary rays

107. When a potted plant is flooded with water, the magnitude of root pressure
(A) Increases (B) Decreases
(C) Remains unchanged (D) Becomes negative

108. The force of tension cohesion exceeds root pressure on a
(A) Rainy day (B) Foggy morning
(C) Sunny day (D) Full moon night

109. At mid day hours, the xylem sap is in a state of
(A) Compression (B) Tension
(C) Relaxation (D) Adhesion

110. Which of the following factors affect the absorption of water by roots
(A) Soil temperature
(B) Soil aeration
(C) RH of the atmosphere
(D) All the above

Transpiration and Stomata

111. Guard cells are surrounded by
(A) Epidermal hairs (B) Mesophyll cells
(C) Pelisade cells (D) Subsidiary cells

112. In apple and mulberry, the stomata on the leaf are present
(A) Upper surface of leaf
(B) Under surface of leaf
(C) Equal on both the surfaces
(D) No stomata at all

113. In potato type leaves, the number of stomata is more on
(A) Upper surface (B) Under surface
(C) Equal on both (D) No stomata at all

114. In water lily, stomata are found on
(A) Upper surface of leaf
(B) Under surface of leaf
(C) Present on both the surfaces
(D) No stomata at all

115. The vestigeal stomata are present in
(A) Floating hydrophyte
(B) Submerged hydrophyte
(C) Both (A) and (B)
(D) None of the above

116. Which of the following is an adaptation to reduce water loss
(A) Presence of thick cuticle
(B) Change of leaf into spine
(C) Change of leaf into phylloclade
(D) All the above

117. On the basis of daily movement of stomata, the Loftfield has classified the stomata into
(A) Two groups (B) Three groups
(C) Four groups (D) No group at all

118. Potamogeton possess a
(A) Functional stomata
(B) More functional stomata
(C) Non-functional stomata
(D) Oat type stomata

119. In scotoactive opening of stomata, they remain open during
(A) Day
(B) Night
(C) Early morning only
(D) Throughout day and night

120. Which of the following plant is able to show rolling of leaf during mid of the day
(A) *Nerium* (B) *Melia*
(C) *Amophila* (D) All the above

121. The following percentage of water absorbed by herbaceous plants is lost in transpiration
(A) 80 (B) 60
(C) 90 (D) 40

122. Transpiration occurs through
(A) Leaves (B) Stem
(C) All aerial parts (D) Roots

123. Guard cells differ from epidermal cells in having
(A) Mitochondria (B) Vacuoles
(C) Cell wall (D) Chloroplasts

124. Stomata open at night and close during day in
(A) Xerophytes (B) Gametophytes
(C) Mesophytes (D) Hydrophytes

125. Transpiring organ in plants is
(A) Epidermis (B) Xylem
(C) Cortex (D) Phloem

126. Which of the following wall of guard cells is thick
(A) Outer (B) Inner
(C) Side wall (D) All the three

127. The cells surrounding the stomatal pore are
(A) Guard cells (B) Subsidiary cells
(C) Chromophil cells (D) None of the above

128. Stomata in angiosperms does not open during
(A) Noon (B) Twilight
(C) 11 O'clock (D) At midnight

129. The principle transpiring organ of plant is
(A) Root (B) Flowers
(C) Stem (D) Leaves

130. The presence of dew on the surface of leaves is due to
(A) Transpiration
(B) Guttation
(C) Exudation of water
(D) Condensation of moisture

131. If the rates of transpiration and water absorption of a flowering plant are measured over a period of twenty four hours, it is found that the rate of transpiration reaches its peak at about mid-day and then declines, whereas the peak for water absorption is reached approximately two hours later. Which one the following statements provides the best explanation of these results
(A) There is a temporary reduction of light intensity at mid-day, which reduces the rate of transpiration
(B) Water absorption is mainly due to root respiration and this is affected by soil temperature, which does not reach a maximum for some hours after the maximum air temperature has been reached
(C) The high rate of transpiration causes a water deficit which results in stomatal closure and an increased concentration of leaf cell sap, which in turn causes continued water uptake
(D) The high light intensity results in high internal oxygen concentrations and so increase water uptake

132. In Vallisneria, stomata are
(A) Present on upper epidermis of leaf
(B) Present on lower epidermis of leaf
(C) Present on both the epidermis of leaf
(D) Not present

133. By which process atmospheric temperature is maintained
(A) Transpiration (B) Respiration
(C) Photosynthesis (D) Phosphorylation

134. Which of the following plants do not transpire
(A) Algae
(B) Fungi
(C) Submerged hydrophytes
(D) All the above

135. Transpiration efficiency is the ratio of
(A) Absorption to transpiration
(B) Rate of ascent of sap to transpiration
(C) Dry matter produced/*kg* of transpired water
(D) Transpiration to area of the leaf

136. Path of greater resistance in transpiration is
(A) Stomatal (B) Cuticular
(C) Pectin (D) All equally

137. It *rc* and rs respectively represents cuticular and stomatal resistances, the total resistance (*R*) could be expressed as

(A) $R = rc + rs$ (B) $R = r - rs$

(C) $\frac{1}{R} = \frac{1}{rc} + \frac{1}{rs}$ (D) $\frac{r}{R} = \frac{1}{rc} - \frac{1}{rc}$

138. When strips of chloride papers are placed on either side of a dorsi-ventral leaf, why the strips on the lower side become speedily pink? Because

(A) More CO_2 is evolved from the lower side

(B) More O_2 is evolved from the lower side

(C) More H_2O is lost from the lower side

(D) All the above

139. Unequal loss of water from two surfaces of a dorsi-ventral leaf can be determined by

(A) Cobalt chloride paper

(B) Ganong's potometer

(C) Darwin's potometer

(D) None of the above

140. Which of the following plants economises transpirational loss of water

(A) C_3 (B) C_4

(C) Both equally (D) C_2

141. The conditions under which transpiration would be most rapid

(A) High humidity

(B) Excess of water in soil

(C) Low humidity, high temperature, guard cells are turgid (open) and moist soil

(D) Low velocity of wind

142. The transpiration in plants will be lowest

(A) When there is high humidity in the atmosphere

(B) High wind velocity

(C) There is excess of water in the cell

(D) Environmental conditions are very dry

143. Phenyl mercuric acetate

(A) Reduces transpiration rate

(B) Reduces photosynthesis

(C) Reduces respiration

(D) Kills the plant

144. The rate of transpiration directly depends on

(A) Temperature

(B) Negative turgor pressure

(C) Diffusion pressure deficit

(D) Vapour pressure gradient

145. Which of the following may be used as an anti–transpirant in plant

(A) Phenyl mercuric acetate

(B) Cobalt chloride

(C) Mercury

(D) Potassium

146. Use of anti–transpirant may check

(A) Transpiration in fruit plants

(B) Transpiration in vegetable plants

(C) Transpiration in crop plants

(D) All the above

147. What will be the effect of water deficit (in soil) on rate of transpiration

(A) It will increase

(B) Decrease

(C) In some plants increasing affect

(D) No change in rate

148. Which of the conditions may be favourable for wide opening of stomata

(A) Red light (B) Yellow light

(C) Blue light (D) None of the above

149. What is the rate of transpiration when temperature increases

(A) Low

(B) High

(C) Low in herbs and high in trees

(D) None of the above

150. What is the action spectrum of transpiration

(A) Green and ultraviolet (B) Orange and red

(C) Blue and far red (D) Blue and red

Mechanism of opening and Closure of stomata

151. Which of the following is most likely cause for wider opening of stomata
(A) Atmosphere outside the stoma is becoming less humid
(B) Secretion of salt molecules by adjacent guard cells is taking place
(C) Water molecules enter the guard cells
(D) The night temperature is going to fall

152. When an oak leaf stoma is open more widely, the most likely process involved is
(A) Water molecules are entering in the guard cells through adjacent cells
(B) The atmosphere outside the stoma is becoming less humid
(C) Salt molecules are being excreted by the adjacent guard cells
(D) Auxins are accumulating in the guard cells

153. Which of the following theories is not related to the opening of stomata
(A) Sachs
(B) K^+ transport
(C) Korper–Kappa theory
(D) Lewitt theory

154. Guard cell movement furnishes an example of
(A) Turgor movement
(B) Tactic movement
(C) Nastic movement
(D) Cyclosis movement

155. Stomata closed and open due to activity of water then movement is known as
(A) Photoactive (B) Scotoactive
(C) Hydroactive (D) Autonomous

156. According to proton transport theory, which plays an important role
(A) Mg^{++} (B) Mn^{++}
(C) Cl^- (D) K^+

157. Which one of the following describes a possible reason for the opening and closing of the guard cells
(A) Stomata open in daylight because photosynthesis occurs in the guard cells producing sugar resulting in higher osmotic pressure
(B) Stomata open in daylight because guard cells have chloroplasts and the epidermal cells do not, and so a differential osmotic pressure arises
(C) Stomata open in daylight because starch is changed to osmotically active substances which increase the turgidity of the guard cells
(D) Stomata close in darkness because the starth produced in daylight by photosynthesis, it is changed into sugars and translocated from the guard cells

158. Which one of the following would lead to stomatal closure
(A) Decrease in carbon dioxide concentration in the intercellular spaces of the leaf
(B) Active photosynthesis in the stomatal guard cells
(C) Conversion of sugar to starch in the stomatal guard cells
(D) Increase in *pH* in the stomatal guard cells

159. Lewitt's explanation for stomatal action is due to
(A) Increase in sugar content of guard cells
(B) Variations in *pH* value
(C) Starch is converted into organic acids
(D) Light causes opening and darkness closure

160. The primary osmolite which causes an opening and closing of stomata is
(A) Sugars (B) Starch
(C) *K*–malate (D) Water

Guttation, Bleeding and Root pressure

161. Guttation may be defined as a process in which plants can
(A) Synthesize carbohydrates
(B) Excrete the salt
(C) Get rid of excess water in liquid form
(D) Compensate the loss of water

162. The process of the escape of liquid from the tip of uninjured leaf is called
(A) Evaporation
(B) Transpiration
(C) Guttation
(D) Evapo-transpiration

163. Guttation is the process of elimination of water from plants through **or** Guttation occurs from **or** The pores in leaves through which water comes out in the form of droplets are called **or** A specialized multicellular structure in leaves which excretes water droplets is called as
(A) Stomata (B) Hydathodes
(C) Lenticels (D) Wounds

164. Guttation is found mostly in
(A) Herbaceous plant (B) Shrubs
(C) Wood plants (D) None of these

165. Water lost by guttation is
(A) Pure
(B) Mixed with salts
(C) Sometimes pure and sometimes impure
(D) None of these

166. Epithem is
(A) Loosely arranged mass of parenchyma in hydathodes
(B) Large intercellular spaces of hydathodes
(C) Xylem elements of hydathodes
(D) Phloem below the air chamber

167. Guttation occurs in
(A) Morning
(B) Moon
(C) Evening
(D) Morning 10 O'clock

168. Process of water exudation through hydathodes is called
(A) Guttation (B) Transpiration
(C) Excretion (D) Hydrolysis

169. Which one is not related to transpiration
(A) Regulation of plant body temperature
(B) Absorption and distribution of mineral salts
(C) Circulation of water
(D) Bleeding

170. Water is lost as liquid from plant body in
(A) Evaporation (B) Transpiration
(C) Guttation (D) None of these

171. Principle of working of all potometers is
(A) Absorption occurs by stem
(B) Absorption is a physical process
(C) Absorption is proportional to transpiration
(D) Transpiration depends on light

172. Which of the following method is adopted by plant for the absorption of water when a cut shoot is fitted in a potometer
(A) Active (B) Passive
(C) Partly both (D) None of these

173. Majority potometers measure the rate at which water is
(A) Absorbed (B) Transpired
(C) Retained (D) Consumed

174. Who had said that "transpiration is a necessary evil"
(A) Curtis (B) Steward
(C) Andersen (D) J. C. Bose

175. Osmoscope is used for
(A) Measuring OP
(B) Measuring TP
(C) Measuring psi
(D) Demonstration of osmosis

176. Which of the following is used to determine the rate of transpiration in plants
(A) Porometer (B) Potometer
(C) Auxanometer (D) Tensiometer

177. Who devised the apparatus to determine the degree of opening of stomata
(A) Ganong (B) Farmer
(C) Darwin (D) All the above

178. Potometer and clinostat are used to study
(A) Photosynthesis and respiration
(B) Transpiration and growth
(C) Phototropism and geotropism
(D) Transpiration and geotropism

179. Darwin's potometer determine
(A) Comparison of stomatal and cuticular transpiration
(B) Transpiration and absorption ratio
(C) Opening of stomata
(D) None of these

180. Who has proved the plasmolysis of sieve tubes
(A) Esau (B) Dixon
(C) Jolly (D) De Vries

Translocation Mineral Ions

181. The theory putforth by Thaine (1964) is of
(A) Protoplasmic streaming
(B) Transcellular streaming
(C) Osmosis
(D) Electro-osmosis

182. The modification of transcellular theory is
(A) Osmosis
(B) Electro-osmosis
(C) Mass flow
(D) Cytoplasmic streaming

183. The hypothesis put forth by Fenson and Williams is
(A) Contractile protein (B) Osmosis
(C) Mass flow (D) None of these

184. The improvements so proposed in pressure flow are
(A) Volume flow (B) Solution flow
(C) Active solution flow (D) All the above

185. In which of the sieve tubes, the callus plugs are formed
(A) Old tubes (B) Long tubes
(C) New tubes (D) Narrow tubes

186. Callus compound is a
(A) Complex sugar (B) Lipid
(C) Protein (D) Phospholipid

187. The flow of organic solutes in plants is in
(A) Upward direction
(B) Downward direction
(C) Lateral
(D) All the above

188. According to Munch theory, the cause of flow of soluble substances is
(A) Protoplasmic flow
(B) Mass flow due to reduction in turgor pressure
(C) Diffusion
(D) None of these

189. By cut in a ringing of tissues, what can be achieved
(A) Food storage in roots and rhizome
(B) Food storage in tubers
(C) Good growth of fruits
(D) All the above

190. Which of the following is a component of phloem
(A) Parenchyma (B) Sclerenchyma
(C) Sieve tubes (D) All the above

191. During translocation the carbohydrates are relatively richer in
(A) Phloem (B) Xylem
(C) Leaves (D) All the above

192. The absorption of food in phloem is
(A) Basipetal (B) Acropetal
(C) Both (A) and (B) (D) None of these

193. What is the substrate for flooting of food in the plants
(A) *IAA* (B) Abscisic acid
(C) *GA* (D) K^+ ion

194. The prevalent view for the translocation of organic solute in plants is
(A) Tension cohesion theory
(B) Mass flow or pressure gradient hypothesis
(C) Root pressure hypothesis
(D) Pulsating activity concept

195. "Cytoplasmic streaming hypothesis" is concerned with
(A) Salt absorption (B) Water absorption
(C) Phloem transport (D) Movements

196. In which form the food is translocated from endosperm to plumule of a fatty seed like castor
(A) Fatty acids (B) Fat
(C) Glucose (D) Sucrose

197. The direction of the conduction of food through phloem is
(A) From below upwards
(B) From top to bottom
(C) From leaves to roots
(D) Phloem never conducts food

198. The chief function of phloem is the conduction of
(A) Food (B) Mineral
(C) Water (D) Air

199. The food stored in the ripening fruit is derived from
(A) Roots (B) Farthest leaves
(C) Nearest leaves (D) Aerial stem

200. In cell transport the difference between permeable transport and bulk transport relates to
(A) Structure of molecules allowed passing through
(B) Solvent system as well as structure of molecules is applicable
(C) Solvent system is applicable
(D) Molecular weight of atoms allowed passing through