Topic 5: Support and transport systems in plants (transpiration)

1.1 The stoma or pore closes when ... *

- ◯ the guard cells as flaccid.
- ◯ the guard cells are turgid.
- ◯ turgidity is increased and the thick walls come together.
- ◯ the turgor is decreased and the thick walls become parted.

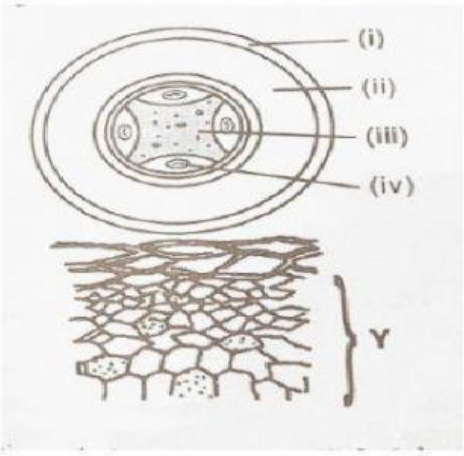
1.2 Indicate which of the following will not have any value in limiting (stopping) transpiration in plants... *

- ◯ a thick cuticle
- ◯ a flat stem
- ◯ sunken stomata
- ◯ hairs on the leaf

1.3 A plant cell is turgid when ... *

- ◯ the pressure potential is greater than the turgor pressure.
- ◯ no more water can enter the cell.
- ◯ the water potential is lower than the adjacent cell.
- ◯ water has been moving out of its vacuole.

Questions 1.4 - 1.6 relate to the diagram below.




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1.4 Which tissue is indicated by (ii)? *

- epidermis
- xylem
- parenchyma
- phloem

1.5 Water and mineral salts are mainly transported upwards through: *

- (i)
- (ii)
- (iii)
- (iv)

1.6 Root hairs develop from: *

- (i)
- (ii)
- (iii)
- (iv)

1.7 Transpiration is least affected by: *

- light intensity
- wind speed
- air temperature
- air oxygen concentration

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1.8 The parts of the root hair which act as a partially permeable membrane are the following: *

- ◯ cell wall and cell membrane
- ◯ cell membrane and vacuole
- ◯ cell membrane, cytoplasm and tonoplast
- ◯ cell wall and tonoplast

1.9 Water is brought to the spongy mesophyll from the xylem by *

- ◯ flowing by osmosis in the cell walls
- ◯ flowing up the water potential gradient
- ◯ the suction force of root pressure
- ◯ moving through the cytoplasm of adjacent cells down the water potential gradient

1.10 Guard cells are: *

- ◯ kidney shaped with the concave inner wall thinner and more elastic than the outer wall.
- ◯ modified epidermal cells with no chloroplasts.
- ◯ modified epidermal cells with chloroplasts
- ◯ modified mesophyll cells

1.11 The Casperian strip: *

- ◯ is found in the epidermis.
- ◯ prevents water entering the pericycle through the cell walls.
- ◯ is permeable to water.
- ◯ consists of lignin.

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1.12 A potometer is used: *

- to measure the rate of transpiration.
- demonstrate root pressure.
- demonstrate the suction force of transpiration.
- demonstrate osmosis.

1.13 Water potential in a cell is high if: *

- the cell is plasmolysed.
- the solute concentration is high.
- the solute concentration is low.
- the pressure potential is low.

1.14 Which fact is NOT true for transpiration? *

- the driving force of this process is the water potential gradient that exists between the soil and the leaves
- the plant can be cooled
- inorganic ions and water can move up the plant from the soil
- organic nutrients can be translocated to all parts of the plant

1.15 High humidity decreases the transpiration rate because:

- there is a steep diffusion gradient between the intercellular spaces and the atmosphere.
- the air is moist which reduces the water potential gradient between the intercellular air spaces and the atmosphere.
- water evaporates quickly from the cell walls in the intercellular spaces.
- the stomata will close

1.16 Too much fertiliser in the soil causes plant cells to become: *

- plasmolysed
- flaccid
- turgid
- overfull

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1.17 Water travels easily in the cell walls of the: *

- endodermis
- xylem
- trachieds
- root cortex

1.18 Transpiration will be higher if: *

- guard cells are pressed together.
- stomata are closed.
- there is little water in the soil.
- the humidity of the air is low.

1.19 Water is pulled up a tree by: *

- root pressure
- capillarity
- osmotic pressure
- transpiration

1.20 Which of the following is not true of xylem vessels? *

- long, dead, empty cells which carry the products of photosynthesis
- cells thickened with lignin
- will not collapse under the suction force of transpiration
- have pits that allow for the lateral flow of water

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