28 What causes water to move from the root hair cells to the endodermis?

A diffusion through cell walls and osmosis down a water potential gradient in the cytoplasm

B diffusion through the symplast and osmosis and root pressure through the apoplast

C osmosis from cell vacuole to cell vacuole and active transport into the endodermis

D osmosis through the intercellular spaces and diffusion in cell walls and cytoplasm

29 Which changes occur as carbohydrate is moved into a sink?

	water potential of the sieve tube element becomes	volume of liquid of the sieve tube element
A	lower	decreases
B	lower	increases
C	higher	decreases
D	higher	increases

29 Which row correctly describes the pressure in the xylem and the water potential in the root hair cells used in the transport of water in a transpiring plant?

	pressure in the xylem	water potential in root hair cells
A	positive	negative
B	positive	positive
C	negative	negative
D	negative	positive

30 Which row correctly identifies the definitions for each of the key terms used in transpiration?

	attraction between water molecules and walls of the xylem vessel	effect created by evaporation of water from the surface of the leaf
A	cohesion	adhesion
B	adhesion	tension
C	cohesion	tension
D	tension	cohesion

31 Which combination of features is characteristic of a phloem sieve tube element immediately after it is loaded from a source?

	water potential of the phloem sieve tube element	lignification of the cell wall
A	higher than source	**not** present
B	higher than source	present
C	lower than source	**not** present
D	lower than source	present

29 Which statement about the pathway taken by a water molecule travelling from the soil to the xylem is correct?

A A water molecule in a cortex cell that takes the symplast pathway must enter the next cortex cell by passing between two adjacent phospholipid molecules in a cell surface membrane.

B A water molecule can pass into xylem vessels either through pits or through the cell wall of the xylem vessel elements by osmosis.

C A water molecule would pass into the cytoplasm of the endodermal cell if it always takes the apoplast pathway all the way to the xylem.

D A water molecule that has left the endodermal cells can travel by either the apoplast pathway or symplast pathway.

30 Amino acids move from a phloem sieve tube element into a root cell.

What are the changes to the water potential and the volume of liquid in the phloem sieve tube element at the sink, when this event is happening?

	water potential in the phloem sieve tube element	volume of liquid in the phloem sieve tube element
A	becomes higher	decreases
B	becomes higher	increases
C	becomes lower	decreases
D	becomes lower	increases

28 Which statement describes movement through a plant in the apoplast pathway?

A Water moves through the cell walls.

B Water moves through the cytoplasm.

C Water moves through the plasmodesmata.

D Water moves through the vacuoles.

30 Which row shows the cause of mass flow in the phloem and the direction of movement of phloem sap by mass flow?

	cause of mass flow in the phloem	direction of movement of phloem sap by mass flow
A	hydrostatic pressure gradient	sink to source
B	hydrostatic pressure gradient	source to sink
C	water potential gradient	sink to source
D	water potential gradient	source to sink

6 **(a)** State **and** explain why the same leaf of a plant can be described as a source or as a sink, depending on the stage of maturity (age) of the leaf.

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..... [2]

(b) Fig. 6.1 lists seven types of plant cell found in leaves.

1	epidermal cell
2	guard cell
3	palisade mesophyll cell
4	phloem sieve tube element
5	sclerenchyma cell
6	spongy mesophyll cell
7	xylem vessel element

Fig. 6.1

Match the correct type of cell from the list in Fig. 6.1 with each statement, **A** to **E**.

Each cell type can be used once, more than once, or not at all.

The first match has been done for you.

A This is a thick-walled cell that provides support. **5**

B This cell is one of a pair of cells that form a stoma. .....

C This cell receives water to build up hydrostatic pressure for mass flow. .....

D This cell needs water for photosynthesis and is columnar-shaped. .....

E This cell secretes a waxy substance to help prevent water loss. .....

[4]

[Total: 6]