

 **SECTION A: MCQ**

1. Which pathway allows water to move through cell walls and intercellular spaces?
 - A. Symplastic
 - B. Transmembrane
 - C. Apoplastic
 - D. Vascular

2. Which structure prevents water from moving freely through the apoplastic pathway at the endodermis?
 - A. Lignin
 - B. Plasmodesmata
 - C. Casparian strip
 - D. Companion cell

3. Water enters root hair cells from the soil mainly by:
 - A. Active transport
 - B. Diffusion
 - C. Osmosis
 - D. Mass flow

4. Which force is mainly responsible for the upward movement of water in tall plants?
 - A. Root pressure
 - B. Diffusion
 - C. Transpiration pull
 - D. Capillarity

5. Cohesion between water molecules is due to the presence of:
 - A. Ionic bonds
 - B. Covalent bonds
 - C. Hydrogen bonds
 - D. Peptide bonds

6. Which tissue is responsible for the translocation of sucrose in plants?

- A. Xylem
- B. Cortex
- C. Phloem
- D. Cambium

7. In the pressure flow hypothesis, sucrose is transported in the phloem by:

- A. Diffusion
- B. Osmosis
- C. Active transport only
- D. Bulk flow driven by pressure gradient

8. What happens at the endodermis when water reaches the Casparian strip?

- A. Water continues moving via the apoplastic pathway
- B. Water is transported out of the root
- C. Water is forced to enter the symplastic pathway
- D. Water movement stops completely

 **SECTION B: Fill in the Blanks**

1. The three lateral pathways of water movement in root tissues are _____, _____ and _____.
2. Minerals are transported from soil into root hair cells by _____ transport.
3. Water moves from soil into root hair cells because the water potential in the soil is _____ than in the root hair cells.
4. The Casparian strip contains _____ and is impermeable to _____.
5. Transpiration is the loss of water _____ from the aerial parts of plants mainly through _____.
6. In the pressure flow hypothesis, sucrose is loaded into the sieve tube at the source by _____ transport.
7. The movement of sucrose from source to sink in plants is known as _____.
8. At the endodermis, the apoplastic pathway is blocked by the _____ strip, forcing water to enter the _____ pathway.

