



Transport in Plants

1 Fill in the missing words

Plants produce glucose in their **leaves/chloroplasts/palisade cells** through a process known as **photosynthesis**. To transport this glucose to the rest of the plant, such as the roots, it is transported along **phloem** tubes which are made of lots of **phloem cells** put end to end. Between adjacent cells there are small **pores/gaps** that allow the cell sap to pass between the cells. Cell sap is a mixture of mainly water and **(dissolved) sugars**. This process of transporting glucose and other nutrients is known as **translocation** and it can transport the cell sap in **both** direction/s.

[8 marks]

2 Describe the role of xylem tissue and how it is adapted to carry out its function

- Xylem tissue consists of dead cells joined end to end
- And strengthened with lignin to form long hollow tubes
- This allows water and mineral ions to be transported through them from the roots up the rest of the plant

[3 marks]

3 What is transpiration?

- Transpiration is the loss of water from the leaves of plants due to evaporation and diffusion

[1 mark]

4 Name 4 factors that affect the rate of transpiration

- 1) Light intensity
- 2) Temperature
- 3) Humidity
- 4) Air flow

[4 marks]

5 What is the transpiration stream?

- The continual chain of water molecules that pass from the roots to the leaves

[1 mark]

6 Why does transpiration increase with temperature?

- At higher temperatures, the particles have more energy and so are more likely to evaporate or diffuse out of the cell

[1 mark]

7 Why does transpiration increase with light intensity?

- As light intensity increases, so does the rate of photosynthesis, which requires the stomata to be open to let in carbon dioxide, so more water vapour can escape

[2 marks]

8 Using your understanding of concentration gradients explain how air flow and humidity affect the rate of transpiration

- Low air flow and high humidity mean there will be more water vapour around the outside of the stomata
- This means a lower concentration gradient from inside the leaf to outside
- So there will be less diffusion of water vapour out of the leaf.

[4 mark]

[Total 24 marks]