

3. Movement into and out of cells

3.3 Active transport

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates

1 (a) Fig. 4.1 is a diagram of a cross-section of a root.

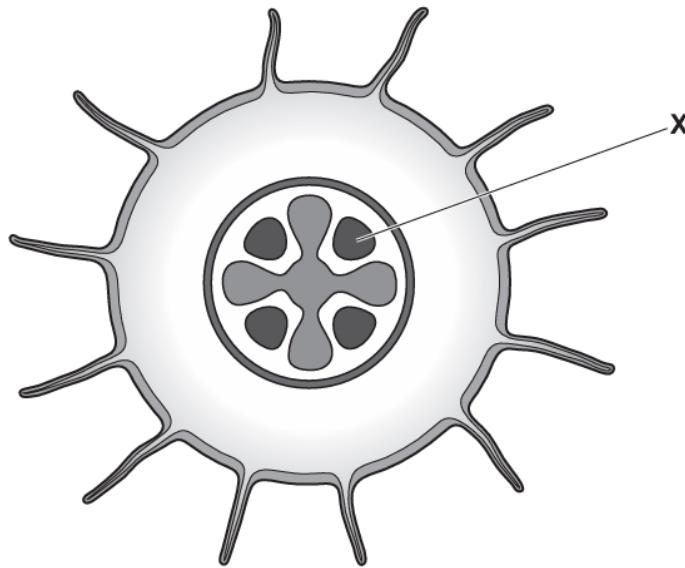


Fig. 4.1

(i) **Circle** **two** substances transported by the part labelled X in Fig. 4.1.

amino acids

cellulose

fatty acids

glucose

glycogen

starch

sucrose

[2]

(ii) Label the part of the root in Fig. 4.1 that absorbs mineral ions from the soil with a label line and the correct name. [2]

(b) Mineral ions are absorbed by active transport and are transported with water in the xylem.

(i) Describe what is meant by the term active transport.

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..... [3]

(ii) State **one** function of xylem other than transport.

..... [1]

2 (b) Substances can also move by osmosis and active transport.

Table 1.1 shows some of the features of diffusion, osmosis and active transport.

Complete Table 1.1 by placing **one** tick (✓) in each row to show the features of diffusion, osmosis and active transport.

One has been done for you.

Table 1.1

| feature | diffusion | osmosis | active transport |
|--|-----------|---------|------------------|
| involves movement of water only | | ✓ | |
| always involves movement across a partially permeable membrane | | | |
| movement is from a higher solute concentration to a lower solute concentration | | | |
| requires energy from respiration | | | |
| involves the movement of both gases and solutes | | | |

[4]

Paper 4

Questions are applicable for both core and extended candidates unless indicated in the question

3 (d) *Chlorella* is also a good source of protein.

(i) State the importance of proteins in active transport. **(extended only)**

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[2]

(ii) State the name of the smaller molecules that proteins are made from.

..... [1]

4 (b) Describe how the process of active transport differs from the process of osmosis.

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[3]

(c) State the type of plant cells that use active transport to absorb mineral ions from the environment. **(extended only)**

..... [1]

5 (b) The epithelial cells of the villi absorb nutrients by diffusion and active transport.

(i) Describe how active transport differs from diffusion.

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..... [3]

6 (b) Transmission of impulses relies on the flow of ions through the cell membranes of neurones down their concentration gradients. Active transport is responsible for maintaining the concentration gradients of ions across the membranes of neurones.

Explain how ions are moved across membranes by active transport. (extended only)

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..... [3]