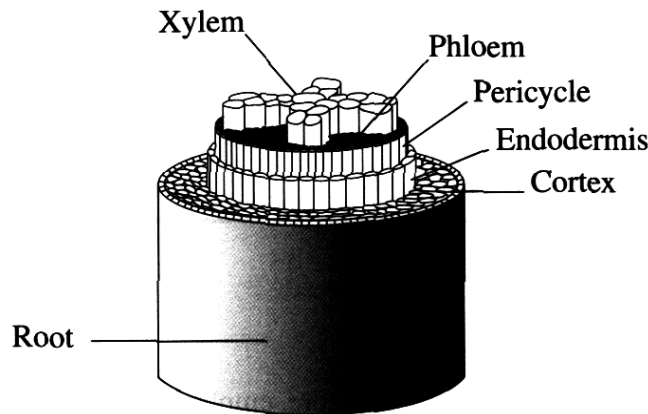


**Marks**

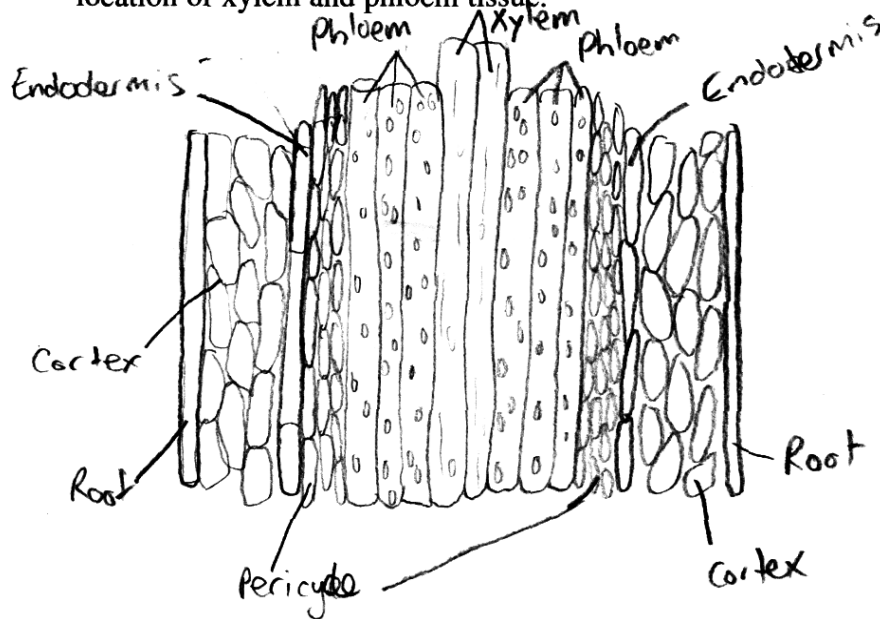
**Question 17 (6 marks)**

The diagram shows the arrangement of tissues in a young plant root.



- (a) From this diagram, draw a transverse section of the plant root. Clearly label the location of xylem and phloem tissue.

3



- (b) Describe ONE current theory about the processes responsible for the movement of materials through phloem tissue in plants.

3

One theory about translocation is mostly accepted however it cannot be proven in all plant varieties. Sugar and then amino solutes are metabolised by a companion cell, Water then diffuses into the <sup>phloem</sup> cells via osmosis creating pressure. It is this pressure which drives the movement of materials through phloem tissue in plants.

eg. Companion cell  $\xrightarrow{\text{sugar solutes}}$  Phloem (requires metabolism)  $\rightarrow$  water creates pressure by osmosis  $\rightarrow$  movement