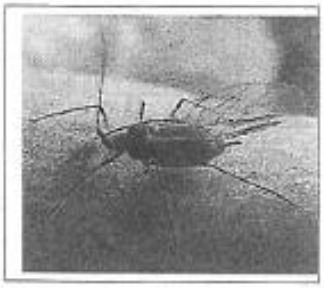
2.1

Aphids can be used to determine which tissue transports various dissolved substances through a plant. These insects feed by pushing their tubular, needle-like mouthparts, called stylets, though the surface of a plant's stem into the underlying tissues. Sap flows through the stylet into the aphid. If the stylet is cut near the aphid's head, the sap continues to flow out of the stylet. This can be collected and analysed. The diagram below shows an aphid feeding on plant sap.



The data in the table below is part of the data collected from an aphid's cut stylet. The concentration is shown in arbitrary units.

Substance	Concentration
Sucrose (simple sugar)	248
Amino acids	42
Potassium ions	79
Chloride ions	14
Magnesium ions	5
Sodium ions	2
Growth hormones	0,02

2.1.1 From which vascular tissue was the aphid sucking this liquid? Give **ONE** reason for your answer. (2)

2.1.2 Which of the substances would the aphid use for making enzymes? (1)

2.1.3 State one substance made by the plant during photosynthesis. (1)

2.1.4 Name **TWO** minerals absorbed by the roots from the soil. (2)

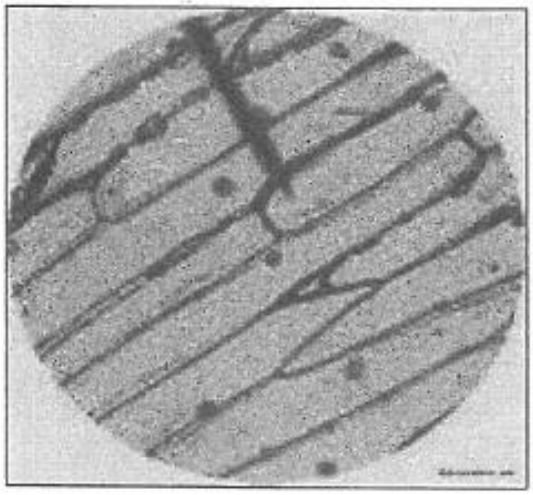
2.1.5 Explain why sucrose, and not starch, is present in the cell sap. (3)

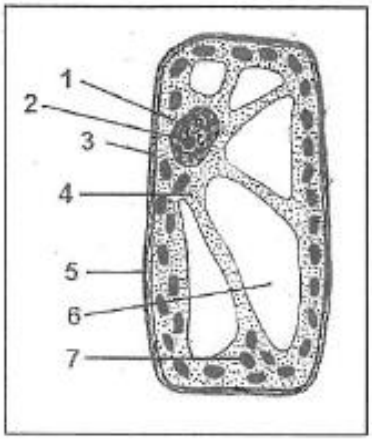
2.1.6 Where is starch stored in a plant? (1)

(10)

2.2 Study the pictures and answer the questions that follow.

A. Micrograph showing onion cells **B. Plant cell**





2.2.1 Name the type of plant tissue that is depicted in picture **A**. (1)

2.2.2 Give **THREE** distinguishing characteristics of the tissue **A**. (3)

2.2.3 Give the name and number of the part in picture **B** that will not be found in the onion cells in picture **A**. (2)

2.2.4 Compare the cell in picture **B** with an animal cell and give **TWO** distinct differences between them. (4)

(10)