

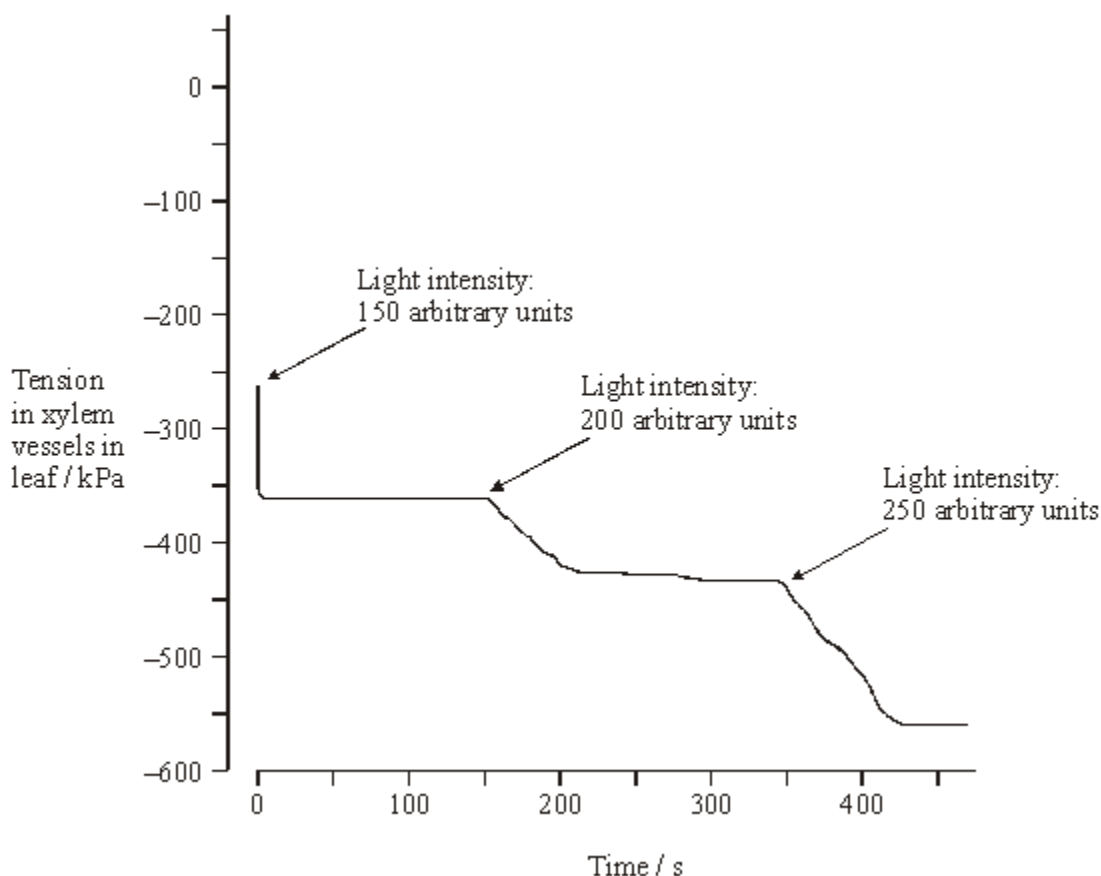
Name of the Student: _____

Max. Marks : 23 Marks

Time : 23 Minutes

Q1.

The chart shows the results obtained from an investigation to determine the effect of light intensity on the tension in xylem vessels in the leaves of a plant.



- (a) Describe and explain the effects of increasing light intensity on the tension in the xylem vessels in the leaves.

(5)

(b) Explain why it was important to keep the humidity constant during the investigation.

(2)

(Total 7 marks)

Q2.

- (a) Dietary recommendations are that lipid intake should make up 30% of energy intake. The recommended energy intake for most women aged 19-49 is 8100 kJ day^{-1} . The energy content of lipid is 37.8 kJ g^{-1} . Calculate the recommended lipid intake per day for these women. Show your working.

Answer _____ g

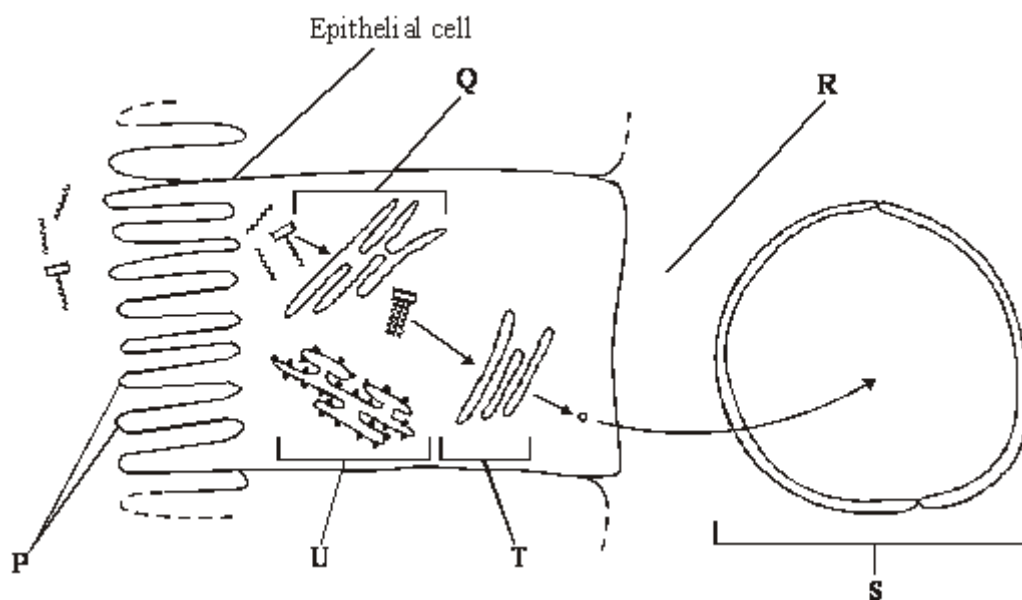
(2)

In humans, triglycerides are the main form of dietary lipids. They are digested in the gut and the products of digestion are absorbed by the small intestine.

- (b) Describe a biochemical test that could be performed on a sample of food to determine whether it contained triglycerides.

(2)

- (c) The diagram shows the events that occur in the absorption of monoglycerides and fatty acids. These molecules enter the epithelial cells of the small intestine by diffusion. Once inside they are reassembled into triglycerides in organelle **Q**. The triglyceride molecules are formed into chylomicrons in organelle **T**. Chylomicrons are made from many triglyceride molecules surrounded with protein molecules. The chylomicrons leave the cell and enter vessel **S**.



- (i) Explain the importance of the structures labelled **P**.

(1)

(ii) Name

R; _____

S. _____

(2)

(iii) Describe the role played by organelle **U** in the formation of chylomicrons.

(2)

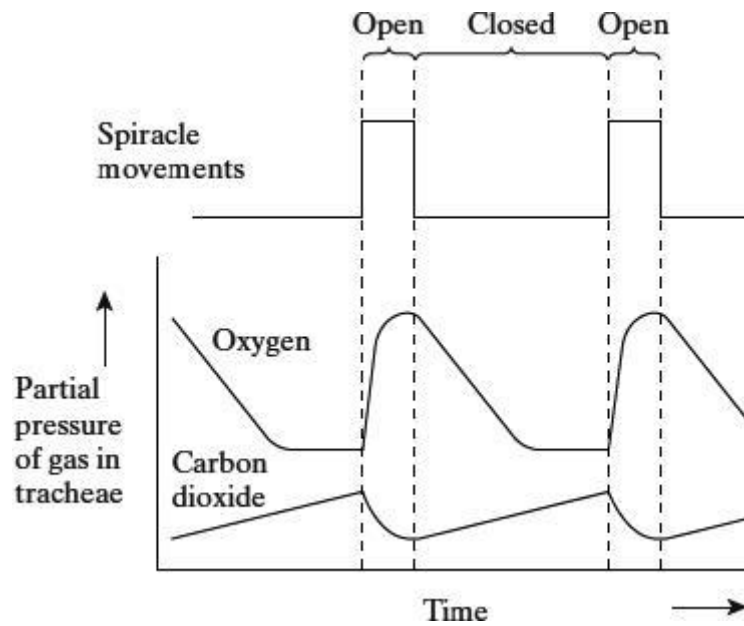
(iv) Suggest how the chylomicrons leave the epithelial cell. Give a reason for your answer.

(2)

(Total 11 marks)

Q3.

Many insects release carbon dioxide in short bursts even though they produce it at a constant rate. The diagram shows how this is achieved in one particular insect.



- (a) Using information from the diagram, suggest what stimulates the spiracles to open.

(1)

- (b) Explain what causes the oxygen concentration in the tracheae to fall when the spiracles are closed.

(2)

- (c) The insect lives in dry conditions. Suggest an advantage of the pattern of spiracle movements shown in the diagram.

(2)

(Total 5 marks)