1 Levels of glucose in the blood (blood sugar) are controlled by the body. In healthy individuals, the levels are controlled by automatic processes, involving chemicals produced in glands.

1 (a) (i) Name one function of glucose in the body.

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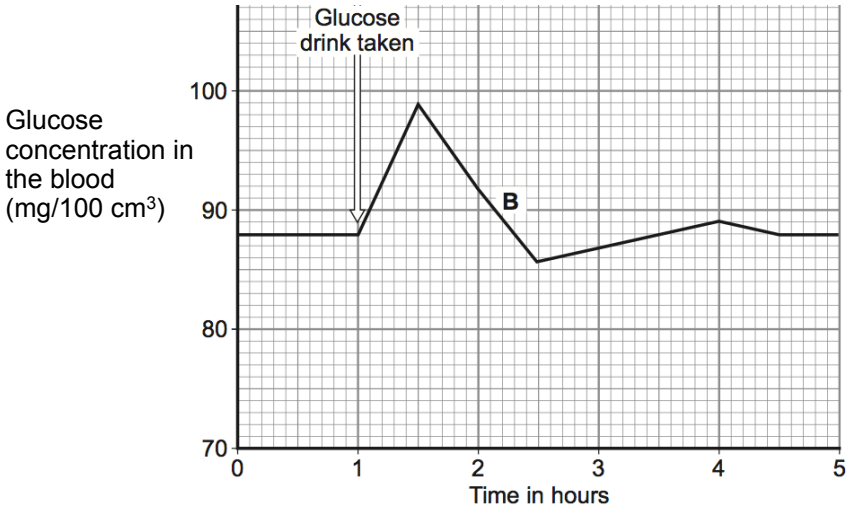
(1 mark)

1 (a) (ii) The graph below shows the levels of blood glucose for a healthy person before and after taking a glucose drink.



Explain the changes in the glucose concentration in the blood over the time period shown.

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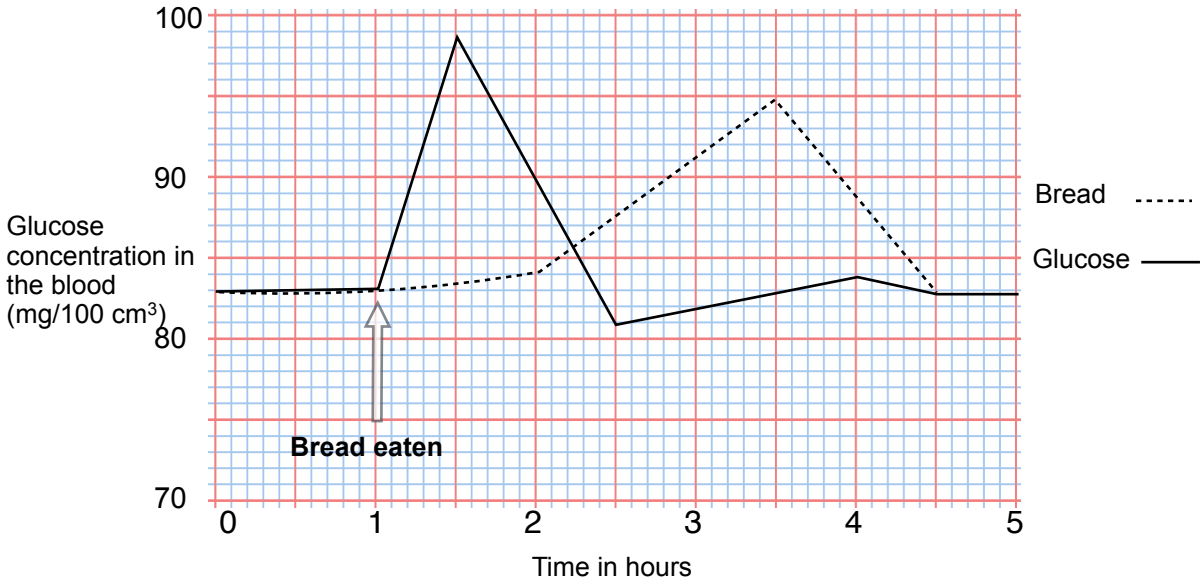
(3 marks)

Do not write outside the box

1 (a) (iii) In a similar experiment, the same person was given some bread to eat instead of a sugar drink. Another graph was drawn to show the changes in blood glucose when the bread was eaten compared to when the sugar drink was taken.



Explain, as fully as you can, the reasons for the differences in blood glucose concentration over time when the person ate the bread.

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(3 marks)

1 (b) Diabetes is a disease that prevents a person from being able to control the levels of blood sugar effectively. Cells in the pancreas cannot produce insulin.

Pancreatic-cell transplantation is a new treatment for diabetes. Insulin-making cells are taken from up to three organ donors who have died. The cells are implanted into the diabetic person in a small operation. The cells soon begin to make insulin. In one study nearly 60% of recipients of pancreatic-cell transplants no longer needed to inject insulin.

Evaluate the new treatment for diabetes compared with using insulin injections.

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(Total 11 marks) *(4 marks)*