1 (a) The diagram shows the cell wall of a bacterium.

Complete the diagram by drawing and labelling the parts found inside the cell wall.

(3)



(b) Decomposition by bacteria helps to release mineral ions, such as nitrates, into the soil.

(i) Explain why the rate of decomposition is affected by the pH of the soil.

(2)

(ii) Explain how nitrate ions help plants to grow.

(2)

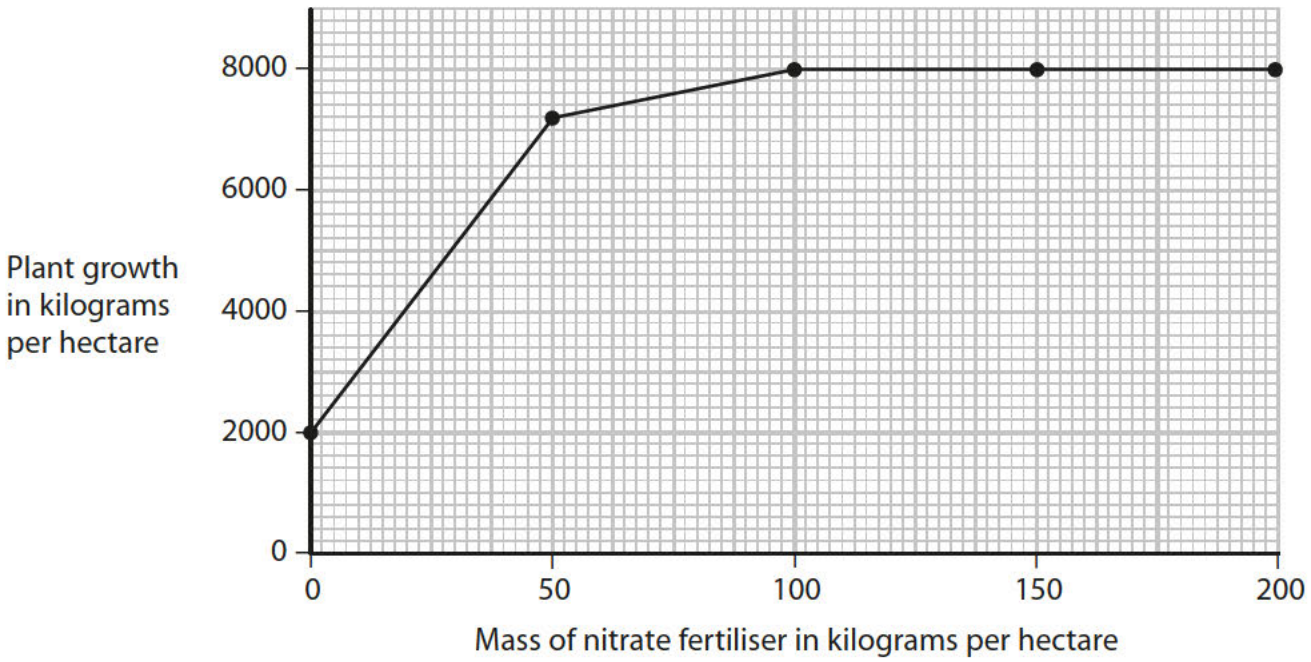
(iii) Explain how nitrate ions get into the root cells of plants.

(3)

(c) The graph shows the change in plant growth when different masses of nitrate fertiliser are added to fields.

(i) On the graph, mark with a cross (X) the point at which the concentration of nitrate ions ceases to be a limiting factor in the growth of the plant.

(1)



(ii) Calculate the percentage increase in plant growth when the mass of nitrate fertiliser is increased from 50 to 100 kilograms per hectare.

(2)

.....%

(iii) Suggest why crops still grow when no nitrate fertiliser is added.

(1)

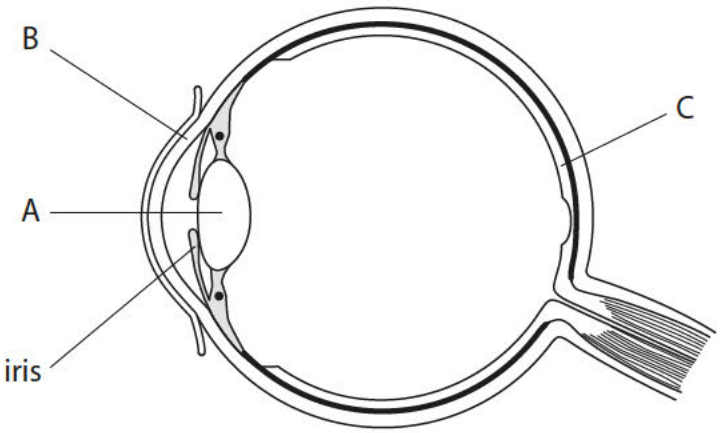
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(Total for Question = 14 marks)

2 The diagram shows a section through an eye with the iris and parts A, B and C labelled.



(a) Name parts A, B and C.

(3)

A .....

B .....

C .....

(b) When you move from a bright room into a dark room you cannot see very well for a while. After a brief time, a change in the iris helps you to see more clearly.

(i) The iris contains muscle tissue.

What is meant by the term **tissue**?

(1)

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(ii) Describe the changes that take place in the iris when moving into the dark room and explain how they help you to see more clearly.

(3)

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(Total for Question = 7 marks)