

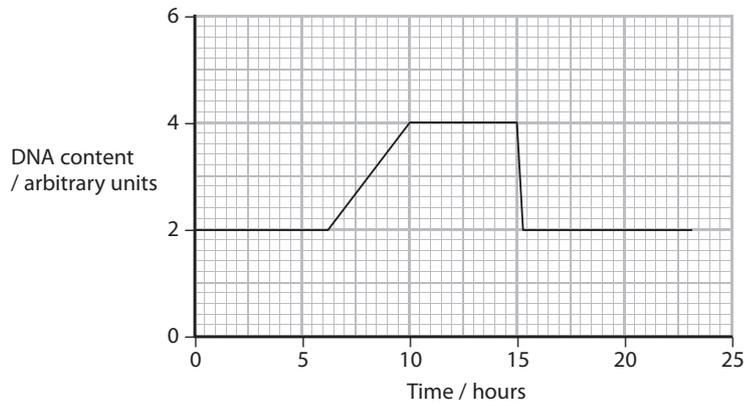
4 Cell division produces more cells. Groups of cells become organised into tissues and further organisation results in the formation of a multicellular organism.

(a) Complete the diagram below by writing in the boxes the missing levels of organisation in the correct order.

(2)



(b) The graph below shows the changes in the DNA content of an onion cell, during one cell cycle.



(i) Explain why the DNA content of the cell doubles.

(2)

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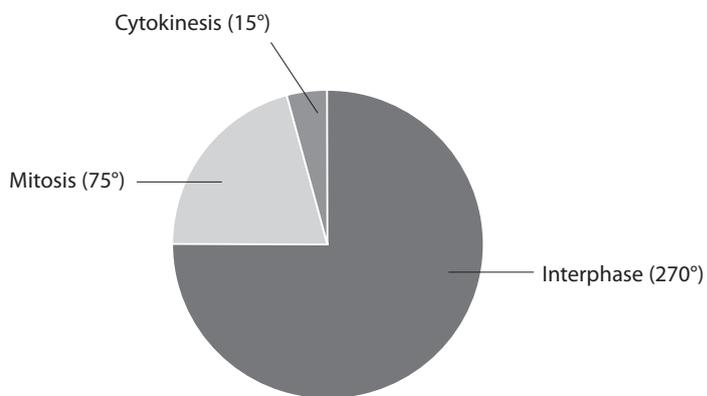
(ii) Using the graph, state how long the S phase (DNA synthesis) takes.

(1)

..... hours

(iii) In onion cells, interphase lasts an average of 18 hours. Using this information and the diagram below, calculate how long mitosis takes. The figures in brackets show the number of degrees for each sector of the circle. Show your working.

(2)



Answer hours



* (c) Prophase is a stage in mitosis. Describe the events that occur during prophase. (3)

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(Total for Question 4 = 10 marks)

