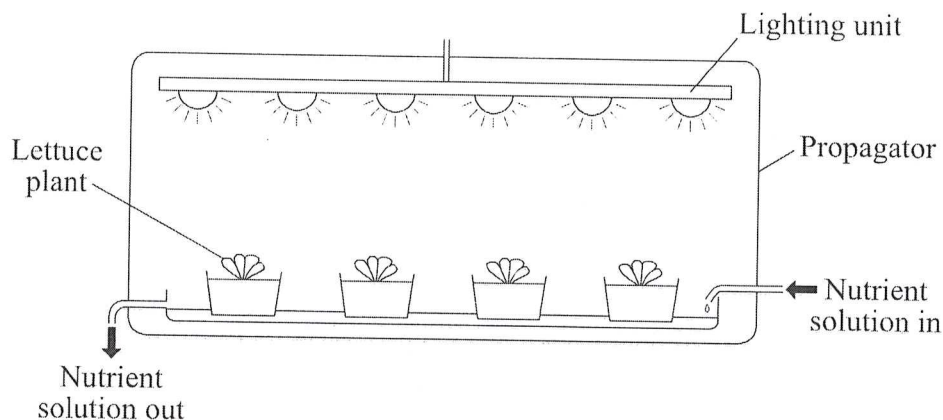
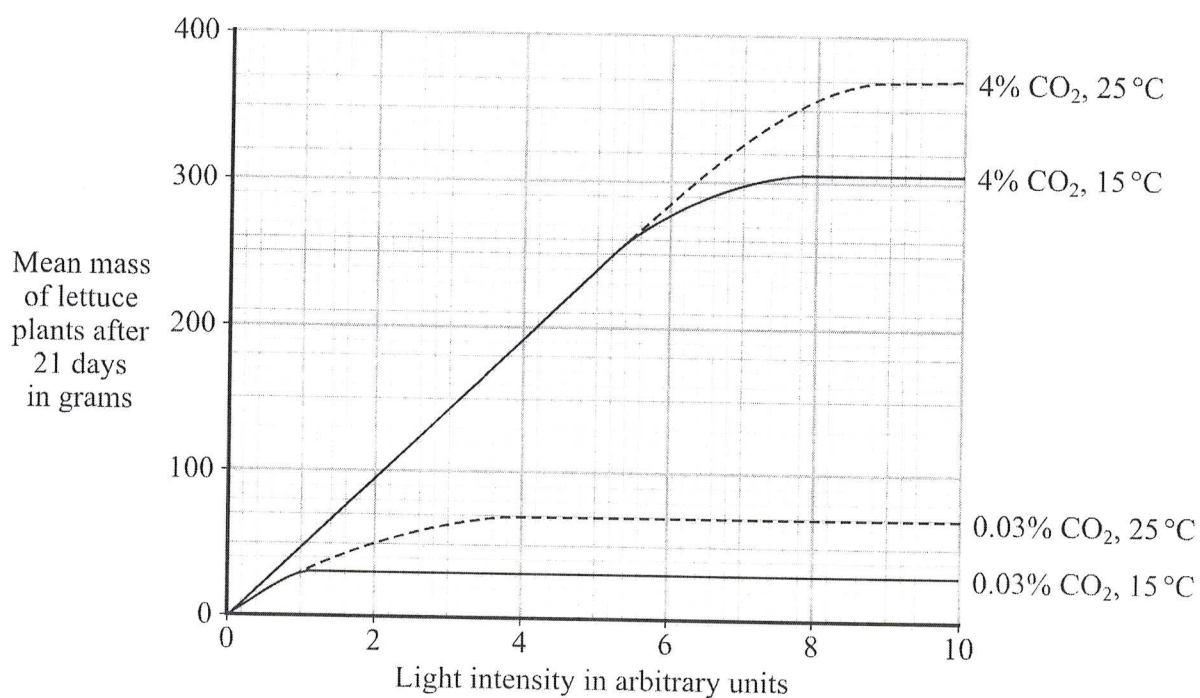


6 Changing the conditions in which plants grow affects how fast they grow.

The diagram shows a propagator in which scientists can control temperature, light intensity and carbon dioxide concentration.



The graph shows the effects of changing the temperature, light intensity and carbon dioxide concentration on the growth of lettuce plants.



- 6 (a) Describe and explain the effect of increasing light intensity on the mean mass of lettuce plants at 4% carbon dioxide and 15 °C.

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(3 marks)

- 6 (b) Growers wish to make maximum profits from their lettuces.

What do they need to consider before making decisions about the growing conditions for their lettuces?

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(2 marks)

Question 6 continues on the next page



- 6 (c) The nutrient solution contains nitrate ions and magnesium ions.

Complete the table to show the functions of these ions in plants and their deficiency symptoms.

Ion	Function in plants	Deficiency symptoms
Nitrate

Magnesium

(4 marks)

9

END OF QUESTIONS



COMPONENT NUMBER: BLY2H**COMPONENT NAME: Additional Science / Biology****STATUS: Final****DATE: June 2008**

question	answers	extra information	mark
6(a)	any three from: <ul style="list-style-type: none"> • ((mean) mass) increases up to 7 / 8 units (of light) then levels off • light limiting factor up to 7 / 8 units • for photosynthesis • other factor / temperature limiting above 7 / 8 units 	must be in correct context	3
6(b)	any two from: <ul style="list-style-type: none"> • cost of providing conditions / heat / light / CO₂ • effect of treatment on profit • relevant use of data from graph eg limiting factors • named other factors eg fertiliser / pest control / weeds / density of planting 	allow too much of factor is wasteful allow taste / appearance	2
6(c)	nitrate function produce amino acids / proteins / enzymes nitrate deficiency stunted growth magnesium function produce chlorophyll magnesium deficiency yellow leaves / plant	ignore DNA do not allow chlorophyll allow description ignore plant dies ignore chloroplasts ignore plant dies	1 1 1 1
Total			9