## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS International General Certificate of Secondary Education

## **BIOLOGY**



Paper 6 Alternative to practical

0010/00

October/November 2005

	Candidates answer on the Question Paper.  There are no Additional Materials	1 hour
Candidate Name		
Centre Number	Candidate Number	

## **READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen in the spaces provided on the Question Paper.

You may use a pencil for any diagrams, graphs or rough working.

DO NOT WRITE IN THE BARCODE.

DO NOT WRITE IN THE GREY AREAS BETWEEN THE PAGES.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer all questions.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part questions.

For Exam	iner's Use
1	
2	
3	
Total	

This document consists of 8 printed pages and 4 blank pages.



1 Fifteen pieces of raw Irish potato, Solanum tuberosum, were cut carefully to a 60mm.

www.PapaCambridge.com Three pieces were placed in each of five different concentrations of glucose solution and left for 2 hours. The pieces were removed and their lengths measured.

Table 1.1 shows the appearance of these pieces at the end of the two hours.

Table 1.1

	Table 1.1		
concentration of glucose solution/ mol dm <sup>-3</sup>	potato pieces after being left in glucose solutions	length of potato/mm	change in length/mm
0.2		165 267 366 mean66	
0.4		1 65 2 61 3 63	
0.6		mean63  156 261 360 mean59	
0.8		1	
1.0		1 2 3 mean	

		For		
2	7	For in	er's	3
0,		7		
1	O.		7	
	3	2		7
-		ď,	^	

- (a) (i) Measure the length of each piece carefully and record these measurem. Table 1.1. Write in the figures on the dotted lines. Nine measurements have completed for you.
  - (ii) Calculate the mean [average] length of the potato pieces. The first three rows have been completed for you.

    [1]
  - (iii) Calculate the change in mean length in all five concentrations of glucose solutions.
  - (iv) Explain why three pieces of potato were used in each solution and not just one piece.

(b) (i) Plot the change in mean length of potato against concentration of glucose solution on the grid below.

Draw a line of best fit through the points.

t change in mean length /mm

concentration of glucose solution/mol  ${\rm dm^{-3}}$ 

[4]

		scribe and explain the changes in mean length of the potato pieces in the decose solutions.	
(ii)		scribe and explain the changes in mean length of the potato pieces in the decose solutions.	For ine.
			Be.C
		[4]	
(c)	(i)	Using the information from the graph, estimate the glucose concentration which results in no change in mean length.	
		[1]	
	(ii)	Suggest why, at this glucose concentration, there is no change in length.	
		[2]	
		total [16]	

**BLANK PAGE** 

**QUESTION 2 IS ON PAGE 6** 

www.PapaCambridge.com

Fig. 2.1 shows a fresh seed of broad bean, Vicia faba, which has been cut in half. 2

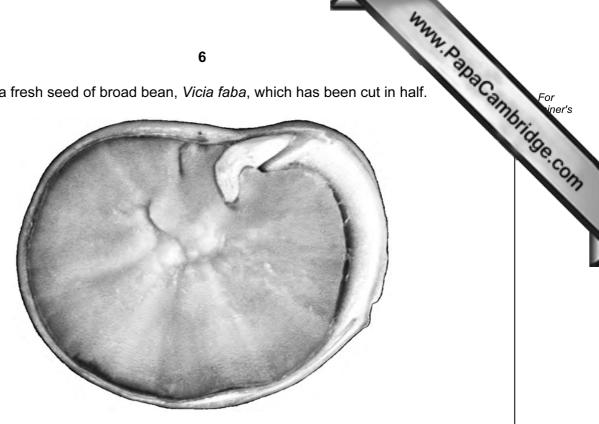


Fig. 2.1

(a) (i) Make a large, labelled drawing of the cut surface of the seed.

(ii)	Measure the length of the seed in Fig. 2.1 and in your drawing.	1
,	Measure the length of the seed in Fig. 2.1 and in your drawing.  Indicate on Fig. 2.1 where the measurement was taken.	2
	length of seed in Fig. 2.1	-
	length of seed in Fig. 2.1	
	length of seed in your drawing	
	Calculate the magnification of your drawing.	
	Show your working.	
	magnification [3]	
'b)	The broad bean is an example of a legume. Legumes are a good source of protein.	
,		
	Describe how you would compare the protein content of two different beans.	
	[4]	
	total [13]	

For iner's

3 If all conditions required for growth are present, some yeast cells in a flask can divide

Fig. 3.1 shows the number of yeast cells in a flask measured over a period of 12 hours.

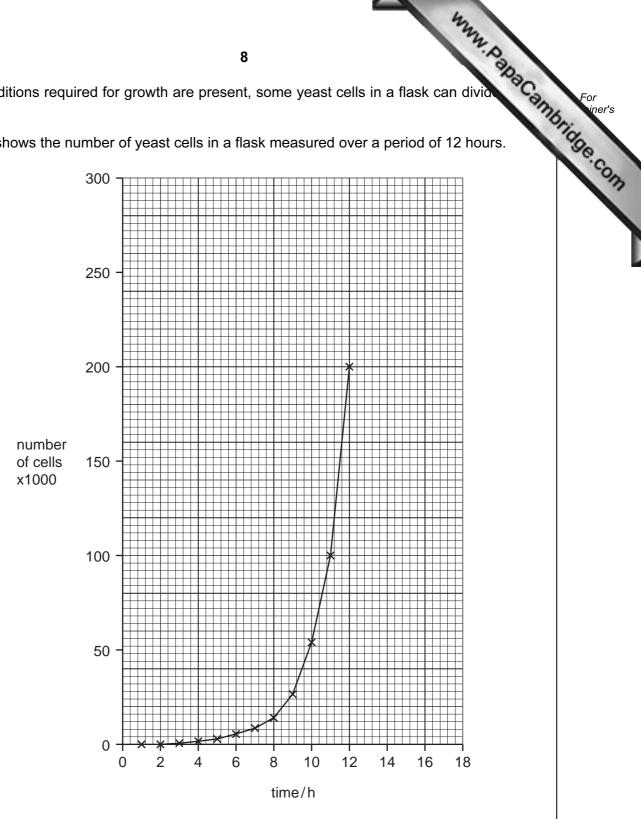


Fig. 3.1

		the state of the s	
		9	
		A State of the sta	
(a)		ggest how you would observe the yeast cells and how you would estimate thoulation in the flask.	Cann
		ggest how you would observe the yeast cells and how you would estimate the bulation in the flask.	
			••••
			[4]
(b)		Fig. 3.1, indicate clearly and name, the <b>two</b> phases shown in this population curred when the change occurs between the two phases with a <b>Q</b> .	ve.
	ivia	·	[3]
(c)	(i)	State two factors needed to maintain the maximum growth of the yeast population	n.
	1.		
	2.		[2]
	(ii)	Suggest what would happen to the numbers of yeast in Fig. 3.1 if one of the conditions becomes limiting after 12 hours.	ese
			[1]
	(iii)	Draw a sketch to show the effect of your suggestion given in (c)(ii), by continuithe curve on Fig. 3.1.	ing
			[1]
		total [1	11]

**BLANK PAGE** 

www.PapaCambridge.com

**BLANK PAGE** 

www.PapaCambridge.com

12

## **BLANK PAGE**

www.PapaCambridge.com

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.