	Candidate
Centre Number	Number

Candidate Name

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Joint Examination for the School Certificate and General Certificate of Education Ordinary Level

BIOLOGY 5090/6

PAPER 6 Alternative to Practical

OCTOBER/NOVEMBER SESSION 2002

1 hour

Candidates answer on the question paper. No additional materials are required.

TIME 1 hour

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces at the top of this page. Answer **all** questions.

Write your answers in the spaces provided on the question paper.

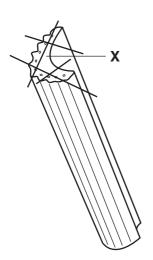
Use a sharp pencil for your drawings. Coloured pencils or crayons should not be used.

INFORMATION FOR CANDIDATES

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

FOR EXAMINER'S USE		
1		
2		
3		
4		
TOTAL		

1 Celery is a crop in which the leaf stalks are eaten. Fig. 1.1 shows part of a celery stalk. Using a sharp blade, the stalk was cut along the lines indicated in Fig. 1.1 to a depth of 4 cm. The celery was immersed in water for 30 minutes. Fig. 1.2 shows the appearance of the celery when it was removed from the water.



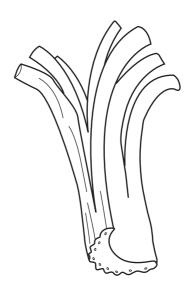
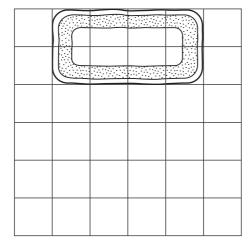


Fig. 1.1

Fig. 1.2

- (a) A typical cell from region **X** is drawn as it would appear under the microscope before the celery was immersed in water.
 - (i) In the space provided on Fig.1.3, draw and label the cell as it would appear after immersion in water for 30 minutes. (The nucleus should **not** be shown.)



cell before immersion in water

cell after immersion in water

[4]

Fig. 1.3

(ii)	Explain how the changes that you have drawn in the cell were brought about.				
	[O]				

(b)	Suggest and explain	wny the cut s	taik curved,	ratner than	just becomin	ng longer.
						[3]
(c)	Celery can be a beneation 100 g of fresh celery	•		lanced diet.		
	protein	0.5 g				
	carbohydrate fat	0.9 g 0.2 g				
	fibre	3.3 g				
	With reference to the eating celery.	information (given, state	and explain	the main nut	tritional benefit of
						[2]
						[Total : 12]

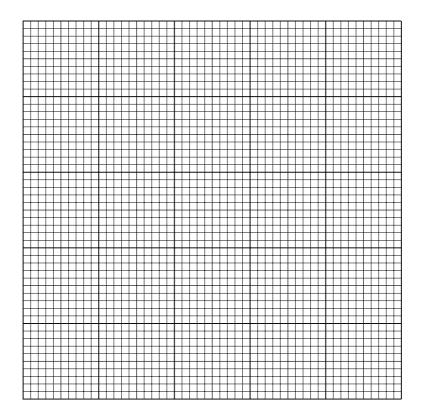
2 Tables 2.1, 2.2 and 2.3 contain information that can be presented in different ways including line graphs, frequency diagrams and pie charts.

Table 2.1 shows the results from an experiment to determine the rate at which an insect larva absorbed oxygen.

Table 2.1

time from start of experiment / min		5	10	15	20	25	30	35	40
amount of oxygen absorbed / arbitrary units	0	7	14	21	28	35	39	41	42

(a) (i) Using the data in Table 2.1, construct a line graph on the grid below. Your graph should be fully labelled.



(ii)	Describe and explain the shape of the curve you have drawn.	
	[2

(iii) From your graph, determine the amount of oxygen that would have been absorbed after 23 minutes.

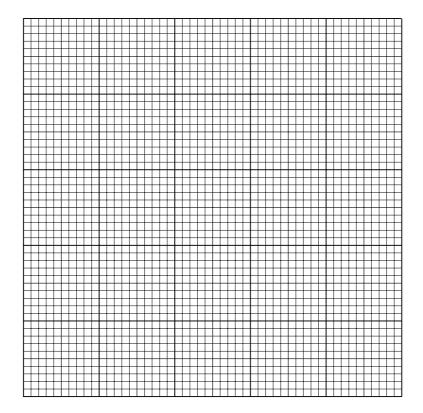
[4]

Table 2.2 shows the results of a survey carried out on a colony of nesting geese to find how many eggs were present in each nest.

Table 2.2

number of eggs in each nest	number of nests
6	4
7	12
8	20
9	36
10	36
11	32
12	16

(b) (i) Present the data in Table 2.2 as a frequency diagram on the grid below. Your frequency diagram should be fully labelled.



[2]

[Turn over

(ii)	Describe the pattern of distribution shown by this frequency diagram.

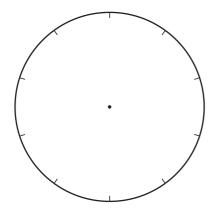
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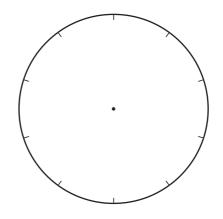
Table 2.3 shows the proportion of each of the main blood groups in two different human populations.

Table 2.3

blood group	frequency in population A (%)	frequency in population B (%)
0	45	30
Α	40	50
В	10	12
AB	5	8

(c) Present the contrasting data in Table 2.3 in the form of pie charts in the circular outlines below.





[3]

[Total : 14]

Question 3 starts on page 8.

3 Figs. 3.1 and 3.2 are photographs of compound leaves, each consisting of a number of leaflets.





Fig. 3.2

x 1.0

Fig. 3.1 x 0.5

(a)	State three vis	sible features	that are shown	by both leaves.

1.

2.

3

[Total : 10]

(b) State three differences shown by the leaves. (The features should be described for both leaves.)

		Fig. 3.1	Fig. 3.2
	1.		
	2.		
	3.		[6]
(c)		gest one way in which the plant shown in the petiole.	
			[1]

4 Fig. 4.1 is a photograph showing seeds inside a dry, flat fruit.

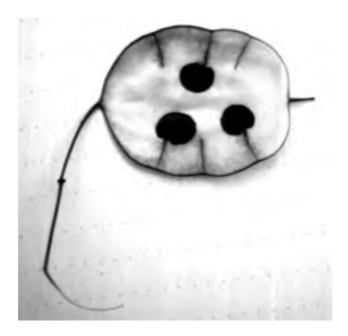


Fig. 4.1

x 1.5

(a) (i) Make a clear, outline drawing to show one of the seeds and its attachment to the fruit. (Labels are **not** required.)

[1]

(ii)	Measure the seed in your drawing, and in the photograph, then use these measurements to calculate the magnification of the seed you have drawn, compared with the size of the seed that was photographed. **measurements* =	
	magnification =[3]	
	[Total : 4]	

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