Centre Number	Candidate Number

Candidate Name _____

CAMBRIDGE INTERNATIONAL EXAMINATIONS

General Certificate of Education Advanced Subsidiary Level and Advanced Level

BIOLOGY 9700/3

PAPER 3 Practical Test AS **MAY/JUNE SESSION 2002**

1 hour 15 minutes

Candidates answer on the question paper.
Additional materials:
As listed in Instructions to Supervisors

TIME 1 hour 15 minutes

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.

INFORMATION FOR CANDIDATES

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

You are advised to spend 45 minutes on Question 1 and 30 minutes on Question 2.

FOR EXAMINER'S USE	
1	
2	
TOTAL	

This question paper consists of 5 printed pages, 2 blank pages and a Report Form.

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UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

[Turn over

Question 1 [45 minutes]

You are provided with five different concentrations of sucrose solution in Petri dishes, labelled **W1**, **W2**, **W3**, **W4** and **W5**.
The concentration of the sucrose solution does **not** correspond to the order of the labelling.

You are also provided with ten potato strips, labelled **W6**.

Using a scalpel or a sharp knife, carefully trim each strip to a length of 50 mm. It is very important that you perform this task as accurately as possible.

Place two strips of potato into each Petri dish and **leave for at least twenty minutes**.

While you are waiting, you should start Question 2.

After twenty minutes, remove the strips from each Petri dish, blot carefully with a paper towel and accurately re-measure their lengths.

(a) (i) Record the lengths of the strips in Table 1.1 and calculate the mean strip length and mean change in strip length, for each solution.

Table 1.1

	W1	**W2**	**W3**	**W4**	**W5**
length of strip 1					
length of strip 2					
mean length					
mean change in length					

[4]

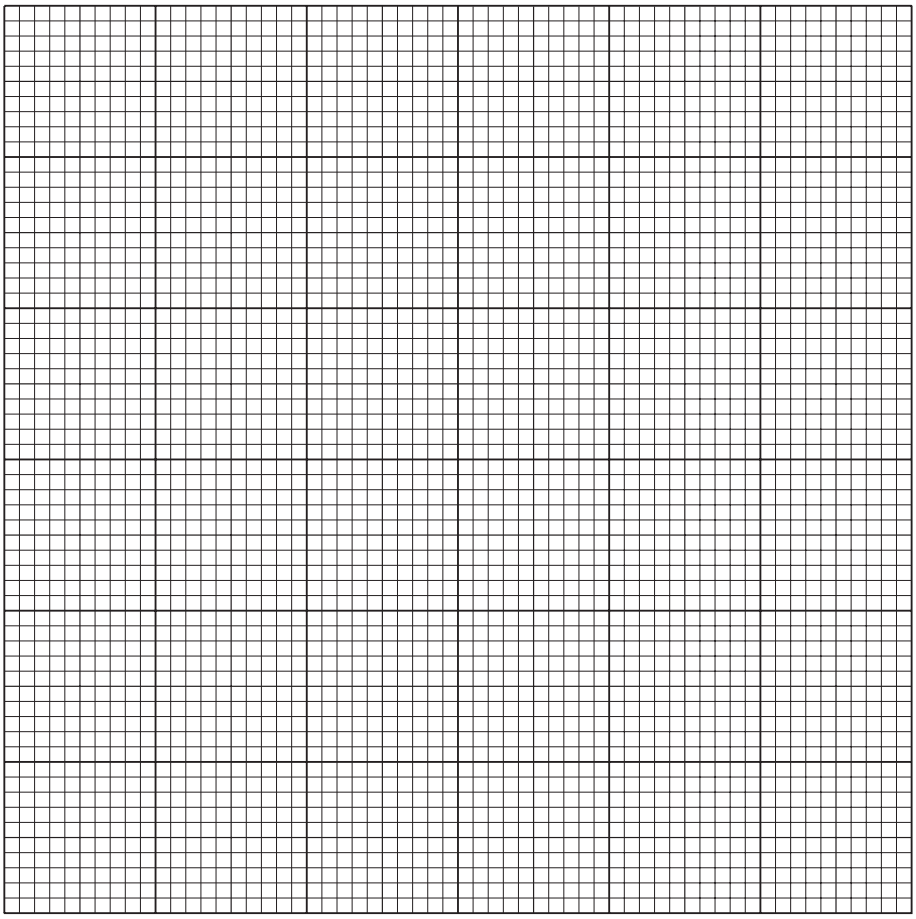
(ii) The concentration of each solution is given in Table 1.2.
From your results, decide which labelled solution corresponds to the concentration indicated and enter **W1**, **W2**, **W3**, **W4** and **W5** in the table.

Table 1.2

solution concentration mol / dm^3	**1.0**	**0.8**	**0.6**	**0.4**	**0.2**
solution name					

[3]

(iii) On the grid, plot a graph of the mean change in length against the molar concentration.



[3]

(iv) Use the graph to determine the molar concentration that is equal to the solute potential of the potato cell sap.

.....[1]

(v) State what is happening to the osmotic movement of water, through the cell membrane, at this concentration.

.....

.....[1]

(b) Suggest three ways in which you could improve this experiment to make your results more reliable.

1. .....

.....

2. .....

.....

3. .....

.....[3]

[Total : 15]

Question 2 [30 minutes]

K7 is a stained, transverse section of an aorta.
Examine **K7**, using a hand lens and a microscope.

(a) Make a large, labelled, accurate plan drawing of **K7**.

[4]

(b) State the magnification of your drawing and your method of calculating it.

.....

.....[2]

(c) Explain the significance of the thickness of the wall and the appearance of the inner lining of the aorta.

wall .....

.....

.....

inner lining .....

.....

.....[4]

[Total : 10]

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REPORT FORM

The teacher responsible for this subject is asked to answer the following questions.

(a) Was the candidate physically handicapped in drawing or in using a microscope or is the candidate colourblind? If so, give brief details.

(b) Was the candidate handicapped by deficient material or apparatus? If so, give brief details.

(c) Was it necessary to make any substitutions for the materials sent from Cambridge? If so, give brief details of the circumstances.

(d) Any comments.

Signed .....

N.B. Information that applies to all candidates need be given on the first candidate's answer book only.