UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

4418624281

BIOLOGY **0610/05**

Paper 5 Practical Test **October/November 2007**

1 hour

Candidates answer on the Question Paper.

Additional Materials: As listed in the Instructions to Supervisors.

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.
You may use a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **both** 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 question.

For Examiner's Use	
1	
2	
Total	

This document consists of **9** printed pages and **3** blank pages.

1 A protein is used to hold other chemicals on to the clear plastic backing of photographic film, as shown in Fig. 1.1.

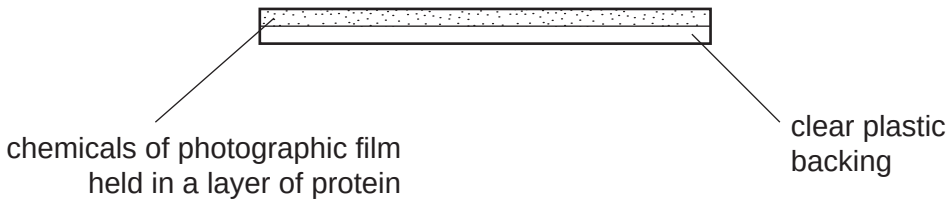


Fig. 1.1

You are provided with four test tubes labelled **A, B, C** and **D**.

Tubes **A** and **B** each contain 10 cm^3 1% solution of protease enzyme.

Tube **C** contains 2 cm^3 solution of pH 8.

Tube **D** contains 2 cm^3 solution of pH 4

READ CAREFULLY THROUGH THE WHOLE OF THE SECTION **(a)**.

(a) You are going to investigate the effect of pH on the activity of this enzyme.
You will do this by timing how long it takes for the protein to be digested so that the coating on the photographic film is removed and the film becomes clear.

(i) Draw a suitable table to record your data.

[2]

Carry out the following steps:

- Add the contents of tube **C** [pH 8] to tube **A**.
- Make sure the contents are well mixed.
- Using the forceps, transfer one piece of film to tube **A** so that the film is submerged in the mixture.
- Shake the tube regularly.
- Note the time taken for the submerged film to become clear.
- Add the contents of tube **D** [pH 4] into tube **B**.
- Repeat the above procedures using a fresh piece of film.

(ii) Record the times in your table.

[3]

(b) (i) Using the data in Table 1.1, draw a line graph to show the effect of pH on the time taken for the digestion of protein on the photographic film.

pH	time taken for protein to be digested / mins
2	12.0
5	8.0
6	2.0
7	0.5
10	8.0

Table 1.1

[5]

(ii) Describe and explain the effect of pH on the activity of the enzyme.

.....

.....

.....

.....

.....

..... [3]

(iii) Plot points for your own data for pH 4 and 8 on the same graph. [1]

(iv) Suggest why your results might not be on the curve you have drawn for the data given in Table 1.1.

.....

.....

.....

..... [2]

(c) Describe how you could investigate the effect of temperature on the rate of enzyme activity.

.....

.....

.....

.....

.....

..... [4]

[Total :20]

2 **W1** is a simple dicotyledonous leaf.

(a) **(i)** Make a large, labelled drawing of the lower surface of the leaf.

[5]

(ii) Describe two ways in which the upper surface of **W1** is different from the lower surface.

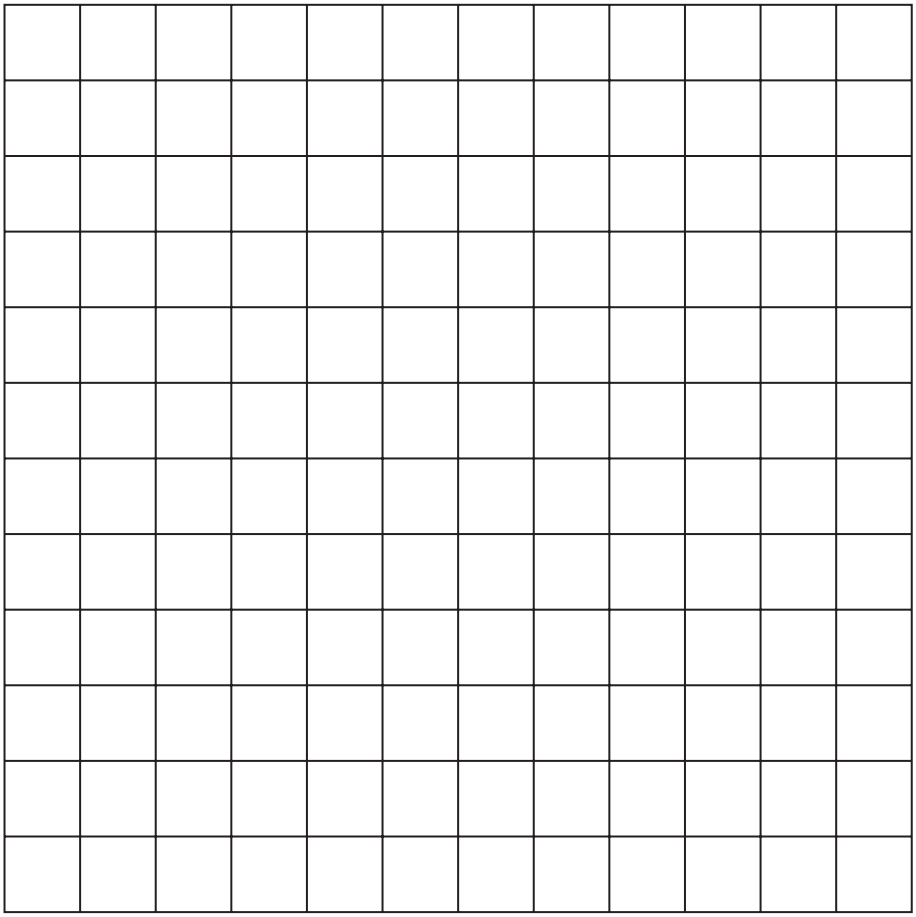
1 .....

.....

2 .....

..... [2]

Place **W1** on the 1cm^2 printed grid below and draw a clear outline around the margin of the leaf.



(b) (i) Calculate the surface area of this leaf to the nearest cm^2.

.....

[1]

(ii) Describe how you obtained as accurate an answer as possible by this method.

.....

.....

.....

[2]

When you reach this stage, raise your hand so that the supervisor can bring a supply of hot water.

DO NOT TOUCH THE CONTAINER ONCE THE WATER HAS BEEN POURED INTO IT

- Using your forceps, grip the leaf W1 by the stalk and plunge the leaf carefully into the hot water so that it is submerged.
- Observe the leaf while it is held in the water for two minutes.

(c) (i) Describe what you observe on the surfaces of the leaf.

.....

..... [1]

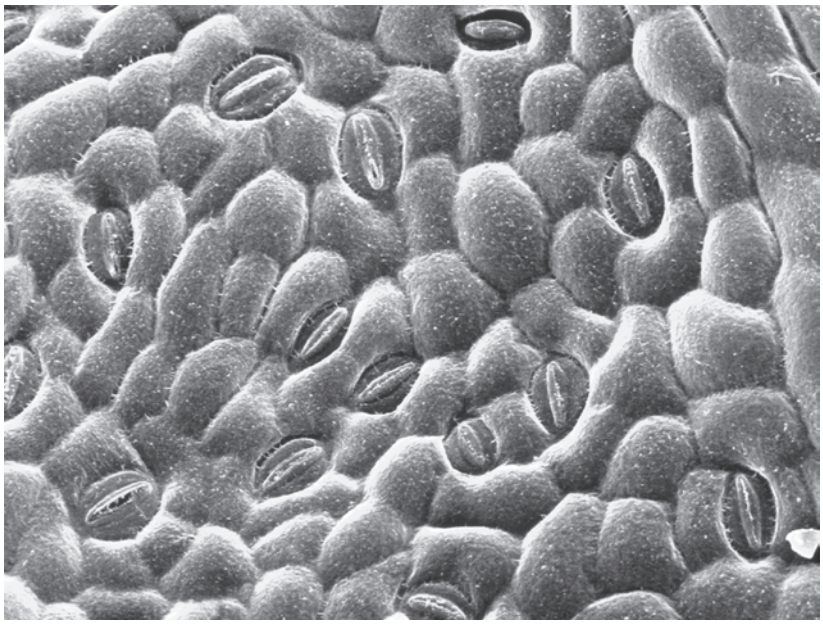
(ii) Suggest an explanation for your observations.

.....

.....

..... [2]

(d) Fig. 2.1 shows a surface view of a leaf similar to **W1**.



Magnification ×145

Fig. 2.1

(i) Identify **two** different types of cells which are visible in Fig.2.1. Using clear ruled lines, label one of each cell on Fig. 2.1. [2]

(ii) Put a circle around **two** of those cells where chloroplasts are to be found. [1]

(e) Suggest how you could determine the number of stomata present on one surface of a leaf such as **W1**.

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total:20]

BLANK PAGE

BLANK PAGE

BLANK PAGE