UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	CANDIDATE NUMBER

5208440925

BIOLOGY **0610/63**

Paper 6 Alternative to Practical **October/November 2013**

1 hour

Candidates answer on the Question Paper.

No Additional Materials are required.

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 **all** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

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.

This document consists of **10** printed pages and **2** blank pages.

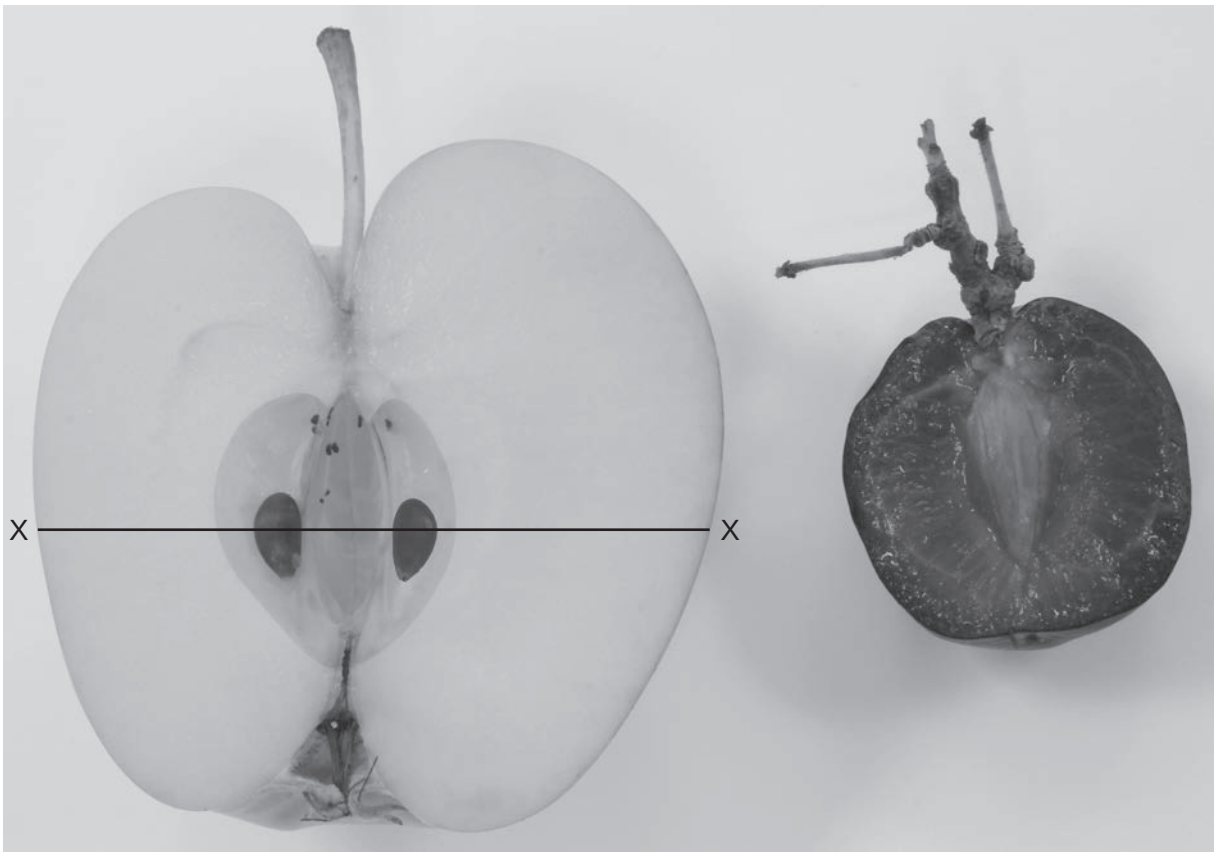
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1 Fig. 1.1 shows two fruits, an apple and a plum, cut in half.

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The apple is referred to as a false fruit because the edible part is not developed from the ovary.

The plum is a true fruit because the edible part is developed from the ovary.



apple plum

Fig. 1.1

(a) (i) Make a large, labelled drawing of the apple.
Include details of the ovary in your drawing.

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[4]

For Examiner's Use

(ii) You are going to calculate the magnification of your drawing.
Measure the width of the apple on Fig. 1.1, between X and X.

width of apple in Fig.1.1 ..... mm

Draw a line on your drawing, corresponding to the line between X and X.
Measure this width of the apple in your drawing.

width of apple in your drawing ..... mm

Calculate the magnification of your drawing.

Show your working.

magnification × ..... [4]

The apple and the plum have a similar shape.

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(b) (i) Describe **one** other **similarity**, visible in Fig. 1.1, of the two fruits.

.....

..... [1]

(ii) Complete Table 1.1 to describe **three** visible **differences**, shown in Fig. 1.1, between the two fruits.

Table 1.1

difference	apple	plum
1	....	....
2	....	....
3	....	....

[3]

As the two fruits ripen they become sweeter and softer.

(c) Describe how you could safely test the apple for the presence of reducing sugars.

.....

.....

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.....

.....

.....

.....

..... [4]

[Total: 16]

For Examiner's Use

2 Trypsin is an enzyme that breaks down the white protein in milk to gradually produce a soluble product and a clear, colourless solution.

A group of students investigated the effect of pH on the activity of trypsin at two different temperatures.

Five different values of pH were tested and each pH was controlled using a buffer solution.

Temperature was controlled using two water baths; at 40 °C and 50 °C.

20 cm^3 of milk and 5 cm^3 of trypsin was used in each test. Before being mixed together, test-tubes of milk and trypsin were both placed together in the water bath for 6 minutes.

The students then observed the test-tubes and recorded the time taken for the milk to become clear.

Table 2.1 shows their results at 40 °C.

Table 2.2 shows their results at 50 °C.

40 °C **Table 2.1**

pH	time for milk to clear / s
5.5	600
6.0	360
7.0	50
7.5	35
8.0	45

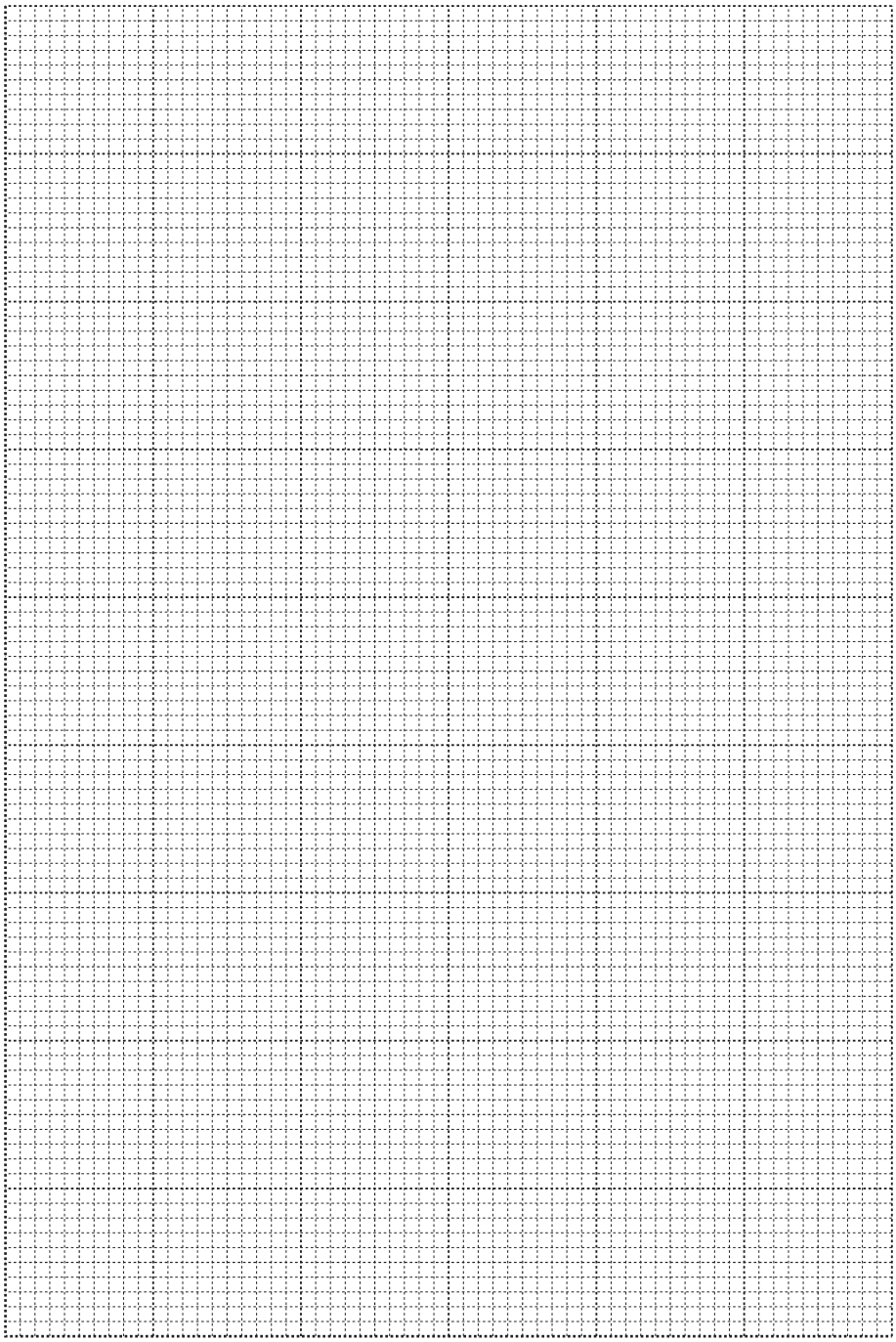
50 °C **Table 2.2**

pH	time for milk to clear/ s
5.5	850
6.0	500
7.0	70
7.5	65
8.0	100

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(a) Plot a graph using the data in Tables 2.1 and 2.2 to compare the effect of pH on trypsin at **40 °C** and **50 °C**. Use the same axes for both temperatures.

For Examiner's Use



[5]

For Examiner's Use

(b) (i) Describe **and** explain the effect of pH on the activity of trypsin.

.....

.....

.....

.....

.....

.....

..... [4]

(ii) Describe the effect of raising the temperature by 10 °C on the activity of trypsin.

.....

..... [2]

(c) (i) Before being mixed together, the test-tubes of milk and trypsin were both placed in the water bath for six minutes.

Suggest a reason for this procedure.

..... [1]

(ii) The students found it difficult to determine when the milk had gone completely clear.

Suggest how they could improve the method.

..... [1]

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(d) Another group of students wanted to investigate the effect of temperature on the activity of trypsin.

For this investigation suggest:

(i) a suitable range of temperatures;

.....

..... [1]

(ii) **two** variables to keep constant;

1 .....

2 ..... [2]

(iii) a variable to measure;

.....

..... [1]

(iv) a suitable control.

.....

..... [1]

[Total: 18]

For Examiner's Use

3 Inhaled air differs in composition from exhaled air.

Table 3.1 shows some of these differences.

Table 3.1

	inhaled air	exhaled air
temperature	varies	body temperature
oxygen	higher	lower
carbon dioxide		
water vapour		

(a) Complete Table 3.1, to show the difference in composition of inhaled and exhaled air for carbon dioxide **and** water vapour.

Write your answers in Table 3.1. [2]

(b) Describe how you could test for the presence of:

(i) carbon dioxide;

test .....

result ..... [2]

(ii) water vapour.

test .....

result ..... [2]

[Total: 6]

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