Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER					

BIOLOGY **0610/61**

Paper 6 Alternative to Practical **May/June 2014**

1 hour

Candidates answer on the Question Paper.

Additional Materials: 300 mm ruler

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, 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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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

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CAMBRIDGE International Examinations

[Turn over

1 Starch is broken down into reducing sugars in the alimentary canal. The digested products are absorbed into the blood.

Some students investigated the action of enzymes on the digestion of starch.

(a) Describe how you would carry out a test for starch.

.....

.....[2]

(b) Describe how you would safely carry out a test for reducing sugars.

.....

.....

.....

.....

.....

.....[3]

The students used a length of tubing that had been securely tied at one end.

- 5 cm^3 of starch solution and 5 cm^3 of enzyme solution were added to the tubing.
- A knot was used to close the open end of the tubing.
- The outside of the tubing was rinsed with water.
- The tubing was supported as shown in Fig. 1.1.

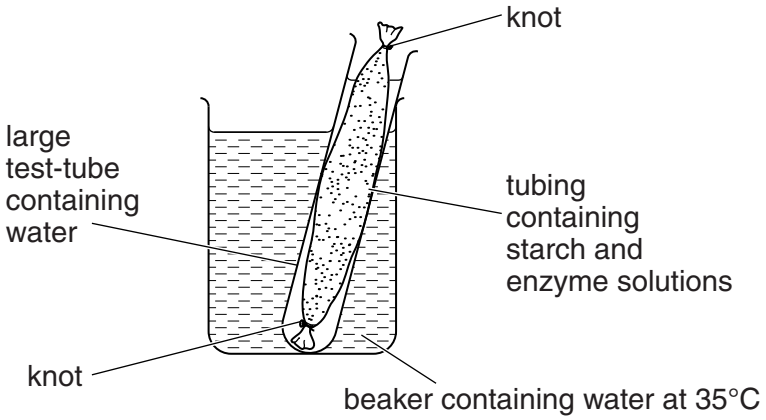

Fig. 1.1

(c) Suggest why the starch and enzyme solutions were kept at 35°C.

.....

.....[1]

- 2 cm^3 were removed immediately from the water in the large test-tube. One drop was placed on a white tile to test for starch. The remainder was placed in a test-tube to test for reducing sugar. This was sample 1.

- Four further samples were removed at 10 minute intervals. Each sample was tested for starch and reducing sugar.

(d) **(i)** Complete Table 1.1 by writing in the observations for the five reducing sugar tests.

Table 1.1

sample	time / min	observation	conclusion
1	0		none
2	10		very little
3	20		some present
4	30		more sugars present
5	40		large amount present

[3]

(ii) The observations for the starch tests were all brown.

Explain what can be concluded from these observations.

.....

.....[1]

(e) Suggest **and** explain what happened during the 40 minutes to give the results in **(d)(i)** and **(d)(ii)**.

.....

.....

.....

.....

.....

.....[4]

(f) Explain why each of the following procedures was carried out:

(i) the outside of the tubing was rinsed before it was placed in the large test-tube of water;

.....

.....[1]

(ii) a white tile was used for the starch test.

.....

.....[1]

(g) **(i)** Suggest which region of the alimentary canal is represented by the tubing.
Give a reason for your answer.

.....

.....

.....

.....[2]

(ii) State the name of the enzyme that works in the alimentary canal to break down starch.

.....[1]

(h) Some students investigated the effect of pH on the activity of this enzyme.
Their results are shown in Table 1.2.

Table 1.2

pH	time for starch to be broken down / min
3.5	9.0
4.0	7.0
5.2	4.0
6.6	1.5
7.0	1.0
8.0	4.5
8.5	10.0

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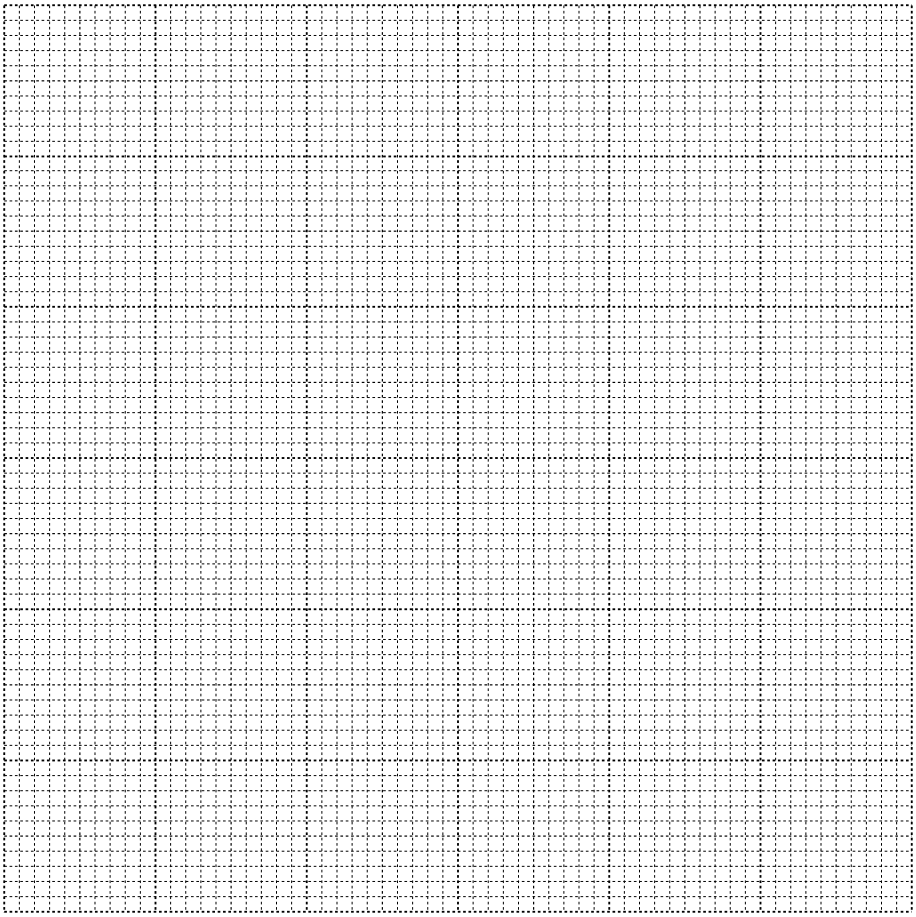
(i) Plot a graph to show the results in Table 1.2.



[4]

(ii) Use the graph to suggest the optimum (best) pH for this enzyme.

.....[1]

(iii) Describe the effect of pH on the activity of this enzyme.

.....

.....

.....

.....

.....

.....[3]

(iv) Suggest a suitable control for this investigation.

.....

.....[1]

[Total: 28]

2 A parasite is an organism that obtains its nutrients from another living organism (the host).

Fig. 2.1 shows the parasitic plant dodder, *Cuscuta epithymum*, growing on the host plant, gorse, *Ulex* sp. The flowers and stems belong to the dodder. This plant does not have leaves or roots, and obtains its nutrients and water from the gorse.

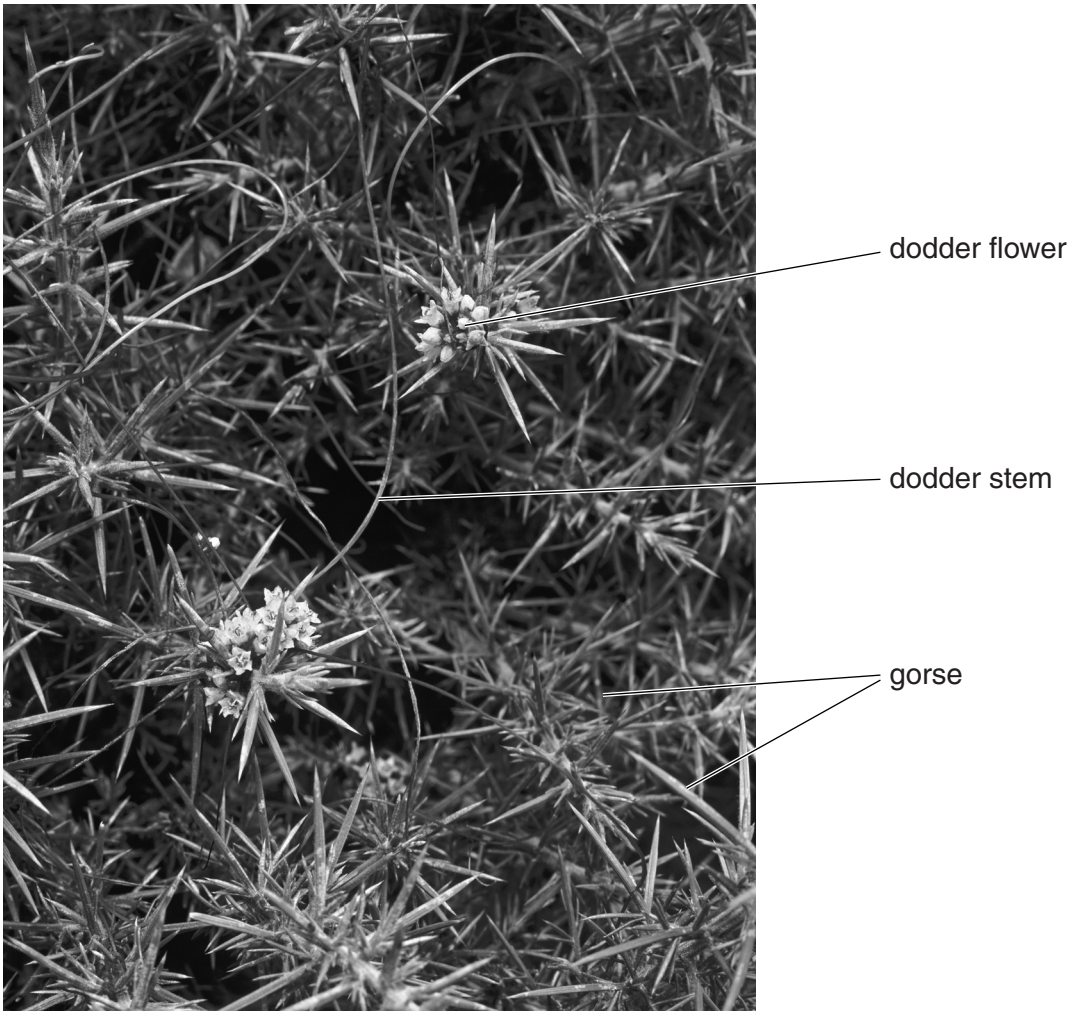


Fig. 2.1

Fig. 2.2 shows a section through the stem of gorse to show the attachment of the dodder as seen using a microscope.

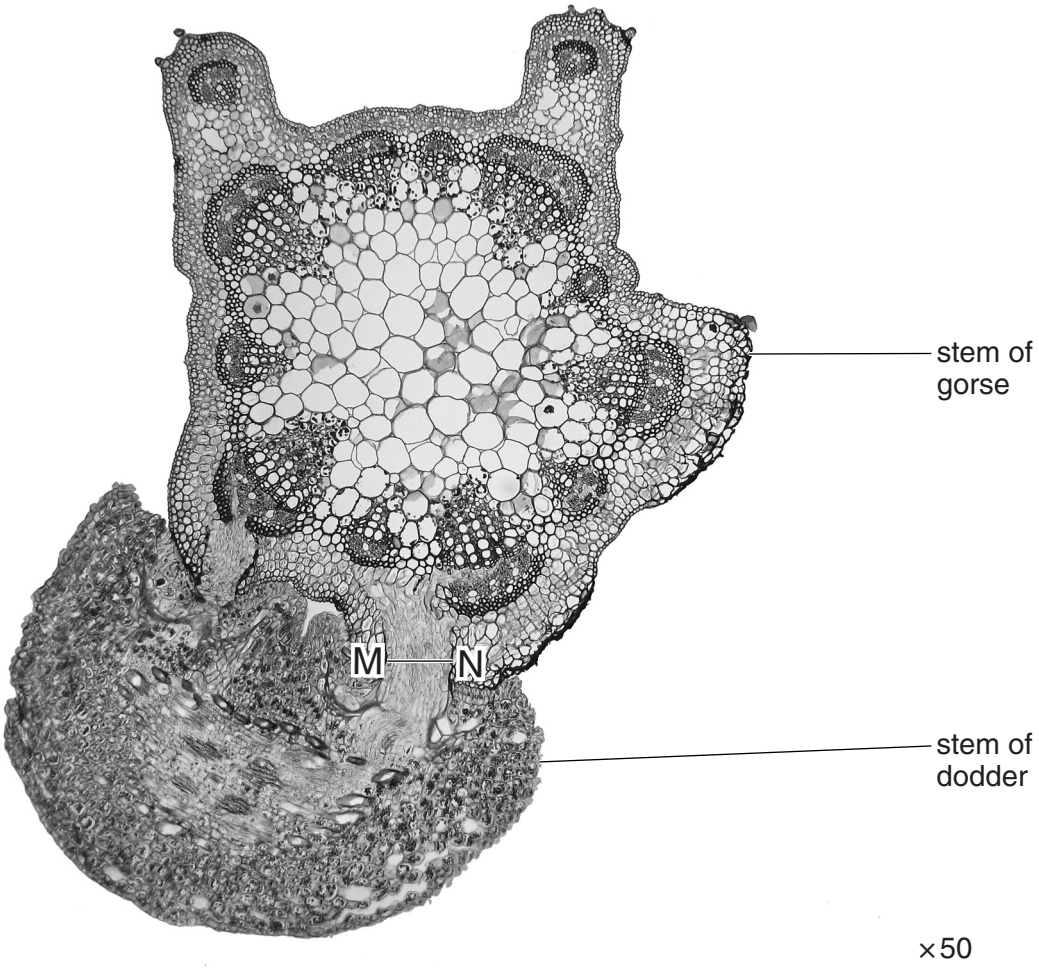


Fig. 2.2

(a) On Fig. 2.2, draw labelled lines to identify the position of:

(i) xylem of gorse;

(ii) phloem of gorse.

[2]

(b) Suggest how dodder obtains minerals from the gorse.

.....

.....[1]

(c) The structure that dodder uses to make contact with the gorse is called a haustorium. The width of the haustorium is marked by the line **MN**, on Fig. 2.2.

Measure the length of **MN**.

..... mm

Calculate the actual width of the haustorium (**MN**).

Show your working.

actual width ..... mm [3]

Fig. 2.3 shows an arthropod that is a parasite that can live on humans.

Fig. 2.3

(d) **(i)** Make a large labelled drawing of the part of the parasite in the rectangle.

[4]

(ii) Name the group of arthropods to which this animal belongs.

Give a reason for your answer.

.....

.....[2]

[Total: 12]

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Copyright Acknowledgements:

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