

CANDIDATE  
NAME

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NUMBER

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**BIOLOGY**

**5090/32**

Paper 3 Practical Test

**October/November 2016**

**1 hour 15 minutes**

Candidates answer on the Question Paper.

Additional Materials: As listed in the Confidential Instructions.

**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 an HB 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.

Write your answers in the spaces provided.

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.

For Examiner's Use	
1	
2	
3	
<b>Total</b>	

This document consists of **11** printed pages and **1** blank page.

In order to plan the best use of your time, read through all the questions on this paper carefully before starting work.

1 Fig. 1.1 shows a flower.



Fig. 1.1

(a) (i) Describe **two** visible features of this flower that suggest it is likely to be insect-pollinated rather than wind-pollinated.

1 .....

.....

2 .....

.....

[2]

(ii) Make a large drawing of the structures of the flower shown within the box on Fig. 1.1.

[4]

(iii) **On your drawing** label the following structures with a label line, the appropriate letter and its biological name:

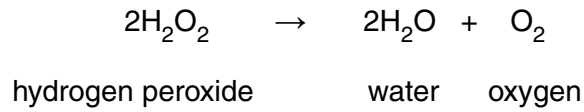
**A** the part of the flower in which pollen grains are produced

**B** the part of the flower to which the pollen grains are transferred during pollination

**C** the part of the flower through which the pollen tube grows after pollination. [3]



- 2 Catalase is an enzyme found in living plant and animal tissue. It catalyses the breakdown of hydrogen peroxide into water and oxygen.



You are provided with large pieces of raw, unboiled potato, 3 cm in length, and some pieces of boiled potato of the same length.

You are going to observe the reaction between raw potato and hydrogen peroxide solution.

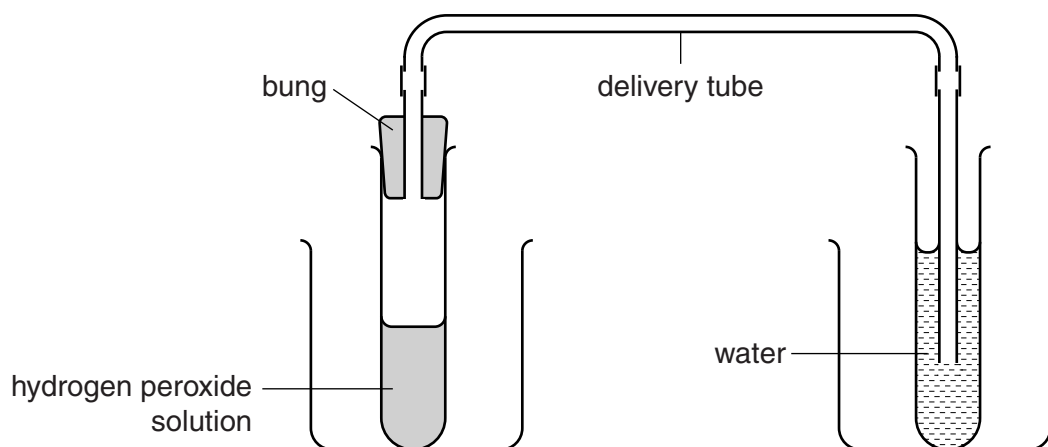
- Put on the eye safety protection provided.
- Use the forceps to place one large piece of **raw** potato carefully into one of the large test-tubes containing hydrogen peroxide solution.

(a) Describe your observations.

.....  
.....[1]

(b) (i) **Read through the following instructions before beginning the experiment.**

The activity of catalase can be measured by counting the bubbles of oxygen gas released using the apparatus shown in Fig. 2.1.



**Fig. 2.1**

- Remove the bung from the test-tube of hydrogen peroxide solution.
- Place a fresh, large piece of **raw** potato in the hydrogen peroxide solution using the forceps provided.
- Quickly replace the bung and ensure that the end of the delivery tube is under the surface of the water in the test-tube.
- Count the number of oxygen bubbles released from the end of the delivery tube in 1 minute.
- Record your result in Table 2.1.
- Cut the remaining large piece of **raw** potato into 6 smaller pieces.
- Repeat the procedure to count the number of oxygen bubbles released in 1 minute, using a fresh test-tube of hydrogen peroxide solution and the 6 smaller pieces of **raw** potato.
- Record your result in Table 2.1.
- Repeat both of these experiments with fresh test-tubes of hydrogen peroxide solution and the **boiled** potato.
- Record your results in Table 2.1.

**Table 2.1**

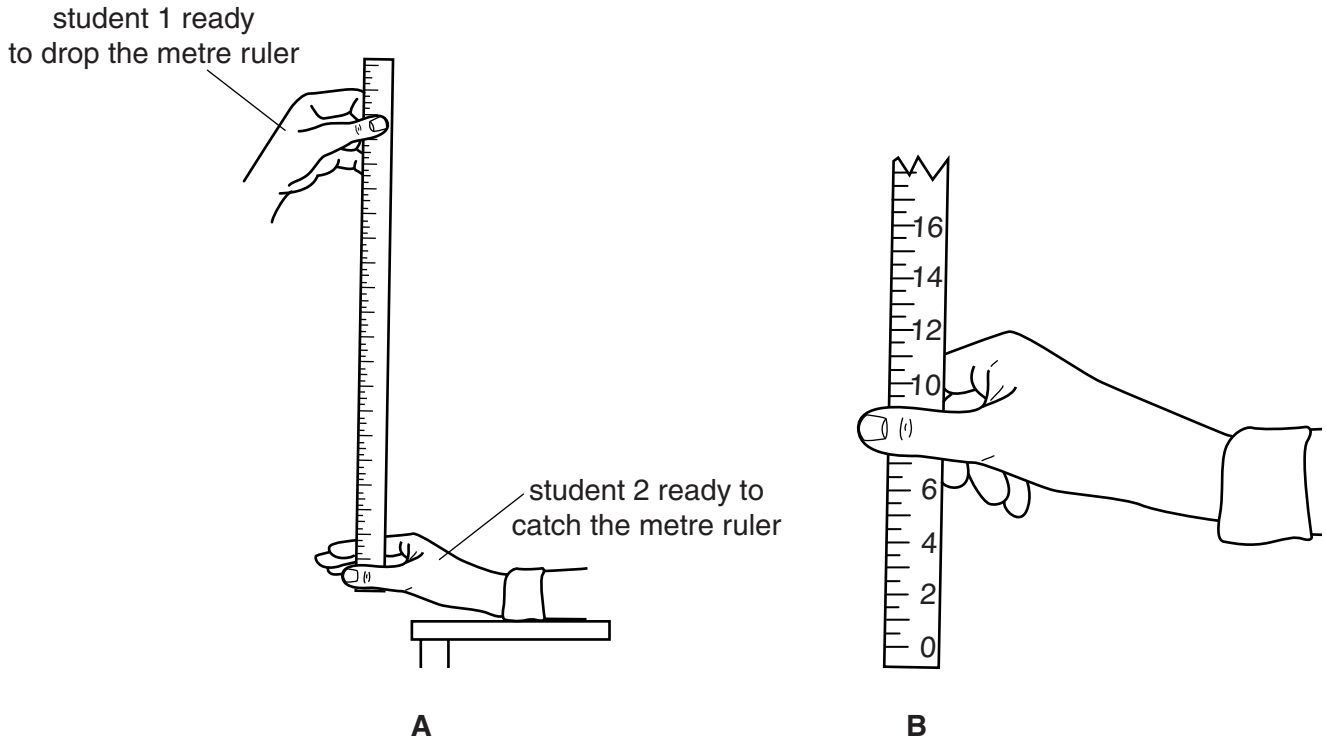
<b>pieces of potato</b>	<b>number of bubbles released in 1 min</b>
one large, raw	
six small, raw	
one large, boiled	
six small, boiled	







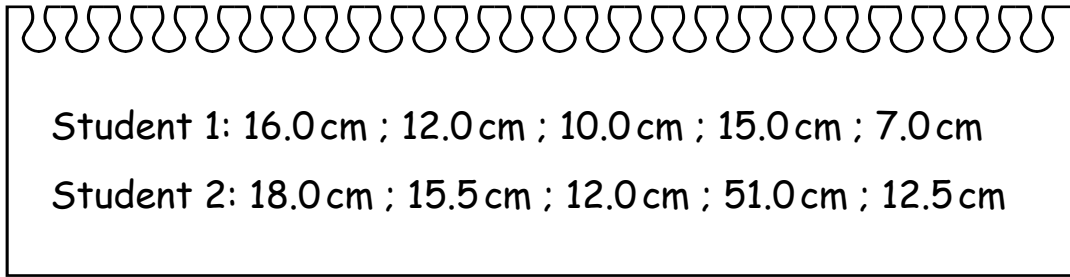
- 3 Two students measured how good their reactions were by using a metre ruler as shown in Fig. 3.1. The reaction being tested was catching a falling metre ruler.



**Fig. 3.1**

Student 1 held the metre ruler near the 100 cm end so that when they let it drop, student 2 would be able to catch it between the thumb and fingers that were held open ready at the 0 cm end of the metre ruler. The measurement on the metre ruler where it was caught by student 2 was recorded. The students then swapped so that student 2 dropped the ruler and student 1 caught it. The ruler was dropped and caught a total of 5 times by each student.

The results obtained by the students were:



Student 1: 16.0 cm ; 12.0 cm ; 10.0 cm ; 15.0 cm ; 7.0 cm  
Student 2: 18.0 cm ; 15.5 cm ; 12.0 cm ; 51.0 cm ; 12.5 cm

(a) (i) Draw a table that could be used to display these results.

[3]

(ii) Calculate the mean result for student 1.

..... cm [1]

(iii) Suggest why, when calculating the mean result for student 2, the result of 51.0 cm should be omitted.

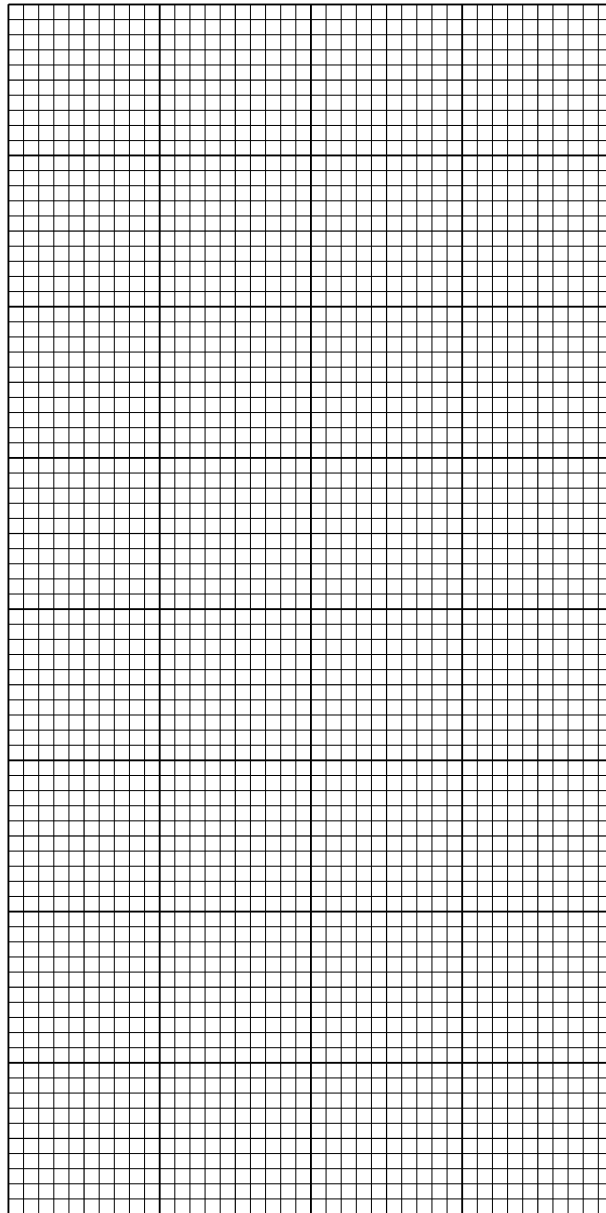
.....  
.....[1]

(iv) Suggest an explanation for this result of 51.0 cm.

.....  
.....[1]

- (v) Construct a bar chart of the mean results obtained for the two students.

The mean result calculated for student 2 was 14.5 cm (omitting the 51.0 cm reading from the calculation).



[3]

[Total: 9]

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