



EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

CANDIDATE
NAME

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CENTRE
NUMBER

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CANDIDATE
NUMBER

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BIOLOGY

6884/03

Paper 3 Practical Test

October/November 2022

1 hour 15 minutes

Candidates answer on the Question Paper.

Additional Materials: As listed in Confidential Instructions.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces provided.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough work.

Do **not** use staples, paper clips, glue or correction fluid.

Do **not** write on the barcode.

Answer **all** questions.

You may use an electronic calculator.

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

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 7 printed pages and 1 blank page.

1 (a) You are provided with an apple, a beaker and 3 boiling tubes labelled **A**, **B** and **C**.

- 1 Place the apple on the tile and cut it longitudinally as shown in Fig. 1.1 into two equal parts.

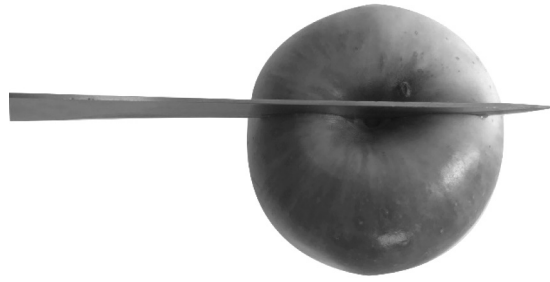


Fig. 1.1

- 2 Place one half of the apple in the Petri dish with water to cover the cut surface.
- 3 Peel the other half of the apple using the knife.
- 4 Remove the inner core of the apple.
- 5 Cut 3 cubes of $1\text{ cm} \times 1\text{ cm} \times 1\text{ cm}$ from the peeled half.
- 6 Take one cube and place it in boiling tube **A**.
- 7 Cut the second cube into 4 equal pieces and place them in boiling tube **B**.
- 8 Crush the third cube using the knife and place it into boiling tube **C**.
- 9 Add water to cover the samples ensuring that the depth of the water is the same in all the boiling tubes.
- 10 Shake all the boiling tubes for about 3 seconds.
- 11 Add about 10 drops of Benedict's solution into each of the 3 boiling tubes.
- 12 Place the three boiling tubes at the same time into the water-bath provided.
- 13 Observe the boiling tubes for up to 2 minutes.

(i) Describe your observations.

.....

.....

.....

.....

.....

..... [3]

(ii) Explain the observations for boiling tubes **A**, **B** and **C**.

.....

.....

.....

.....

..... [2]

(b) Suggest the aim of the investigation.

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

(c) Explain why it is **not** necessary to add the Benedict's solution at the same time in all the boiling tubes in step 11.

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

(d) State **two** variables that were controlled in the investigation to ensure that the results are reliable.

1
2 [2]

(e) State **one** advantage of heating the sample in a water-bath other than heating directly over a Bunsen burner.

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

(f) Apples also contain vitamin C.

Describe how you would test a crushed apple in water for the presence of vitamin C.

.....
.....
..... [2]

(g) Remove the other half of the apple from the Petri dish and wipe the cut surface dry.

(i) Draw the cut section of the other half of the apple and label the ovary as **S**.

[3]

- (ii) Apple seeds are dispersed by animals.

State a visible feature of an apple which shows that its seeds are dispersed by animals.

..... [1]

[Total: 16]

- 2 (a) You will carry out an investigation to count the number of bubbles of gas produced per unit time by yeast.

- You are provided with yeast and glucose solution.
- Add the yeast provided to the glucose solution and shake gently.
- Set up the apparatus as shown in Fig. 2.1 and keep the water-bath between 35 °C and 40 °C.

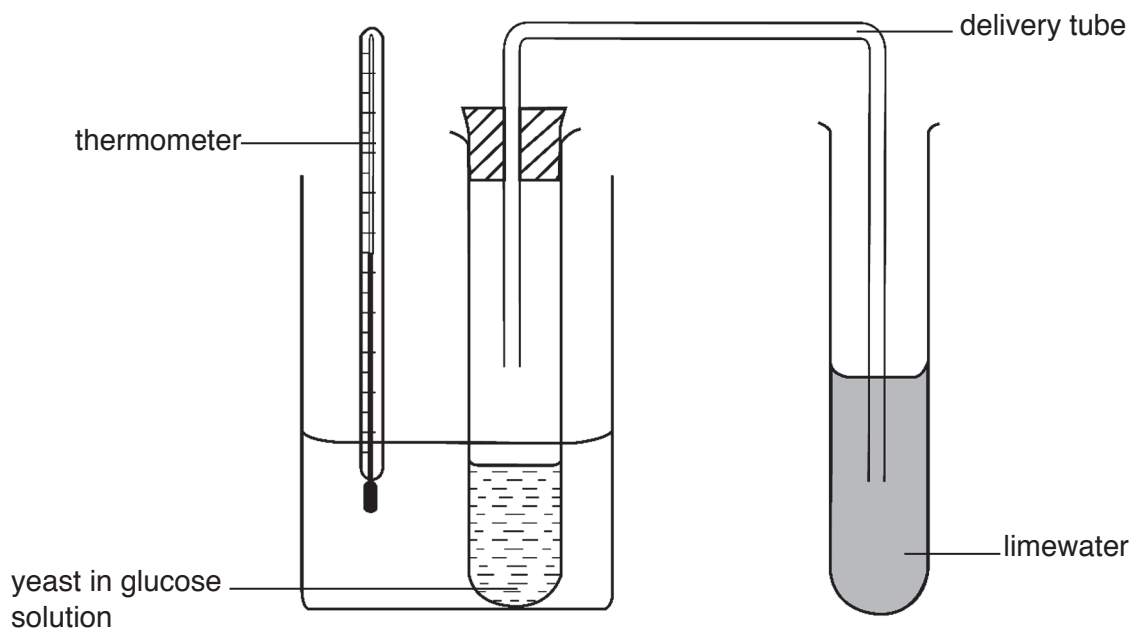


Fig. 2.1

- Leave the set-up for three minutes and then start counting the number of gas bubbles produced in one minute.

- (i) Record the number of bubbles released in one minute.

..... [1]

- (ii) Calculate, using your result in (i), the rate of bubble production per second.

Your answer must show the unit of measurement.

..... [2]

(iii) State a reason for leaving the apparatus for three minutes before counting the number of bubbles.

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

(iv) Describe and explain the change in the limewater as the experiment continues.

.....
.....
.....
..... [3]

(v) Suggest and explain the effect of leaving the set-up for 24 hours at the same temperature on the number of bubbles released per second.

.....
.....
..... [2]

(vi) Suggest a change to the method, other than increasing the temperature, that would increase the rate of reaction.

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

(vii) Describe how you would modify the investigation in Fig. 2.1 to find out if glucose is necessary for the change in the limewater.

.....
.....
.....
..... [2]

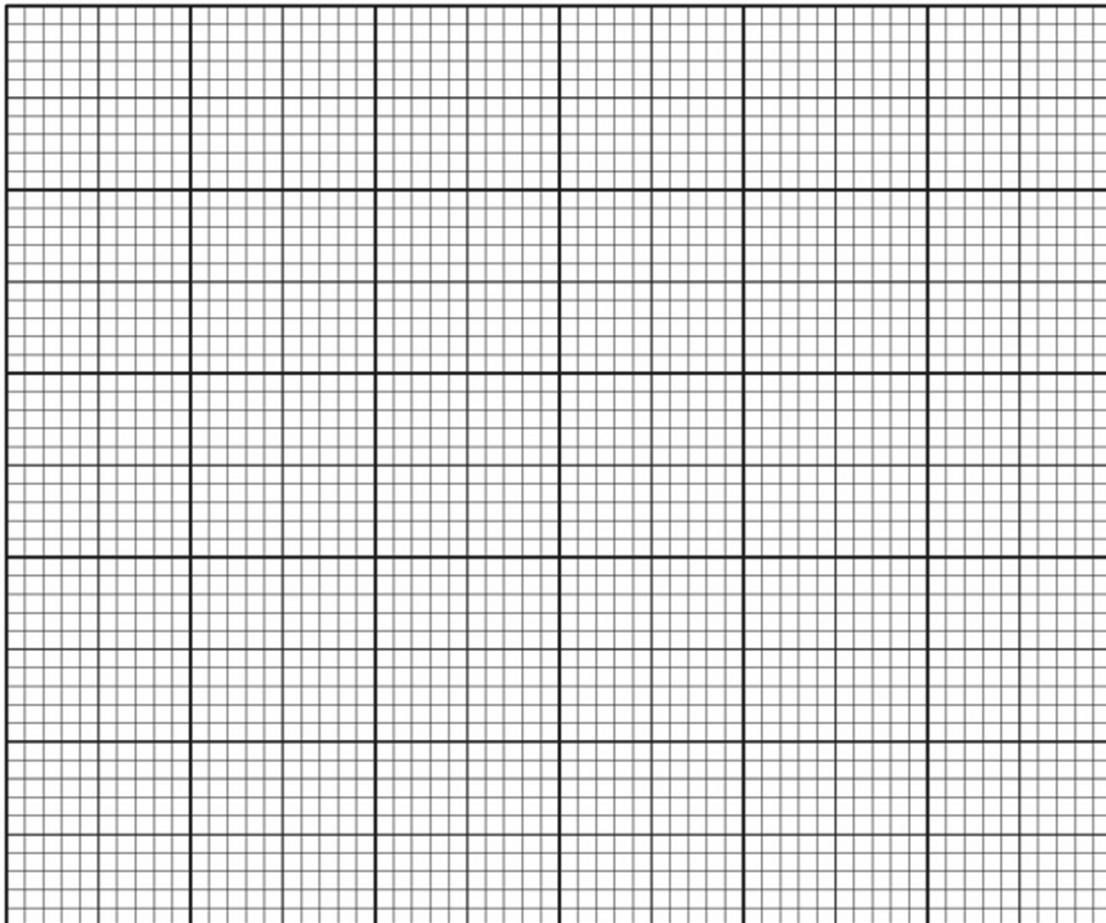
- (b) A student carried out a similar investigation to measure the number of bubbles produced at different temperatures.

The results are recorded in Table 2.1.

Table 2.1

temperature/°C	rate of bubble production/ bubbles per minute
0	0
15	11
30	33
45	75
60	54

- (i) Plot, on the grid, a graph of the results shown in Table 2.1.



[5]

(ii) Estimate, using your graph, the rate of bubble production at 40 °C. Show, on your graph, how you determined the answer.

..... [2]

(iii) Describe the trend shown by the results in Table 2.1 and your graph.

.....
.....
.....
.....
..... [4]

(c) State the independent variable in the investigation.

..... [1]

[Total: 24]

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