



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 2021

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 **6** printed pages and **2** blank pages.

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

- 1 You are going to carry out an investigation to determine the role of fur in regulating body temperature in a mammal. You will use cotton wool to represent fur and boiling tubes with hot water to represent a mammal.

You are provided with hot water, cotton wool and two boiling tubes of the same size.

- Label one boiling tube **A** and the other one **B**.
- Tightly wrap cotton wool around boiling tube **A** to cover it.
- Hold the cotton wool in place with a rubber band as shown in Fig. 1.1.
- Leave boiling tube **B** unwrapped.
- Stand both boiling tubes in the test-tube rack or support provided.
- $\frac{3}{4}$ fill each boiling tube with the hot water provided.

Caution: The water may be very hot, therefore handle it with care to avoid scalding.

- Quickly insert a stopper fitted with a thermometer into each tube as shown in Fig. 1.1.

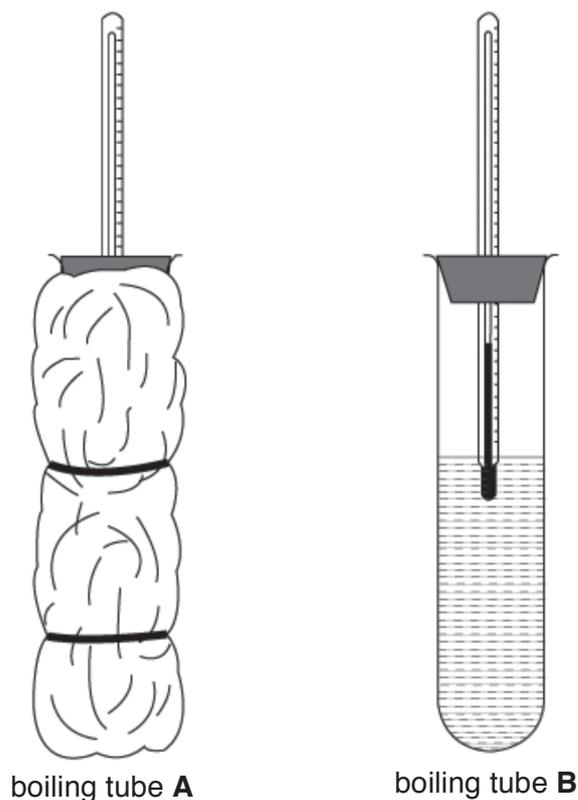


Fig. 1.1

- (a) (i) Measure the temperature of the water in both boiling tubes immediately you have closed them with the stoppers.

Record the temperatures for boiling tubes **A** and **B** in Table 1.1 for time 0 minutes.

- (ii) Measure the temperature at 2 minute intervals for 10 minutes and record your observations in Table 1.1.

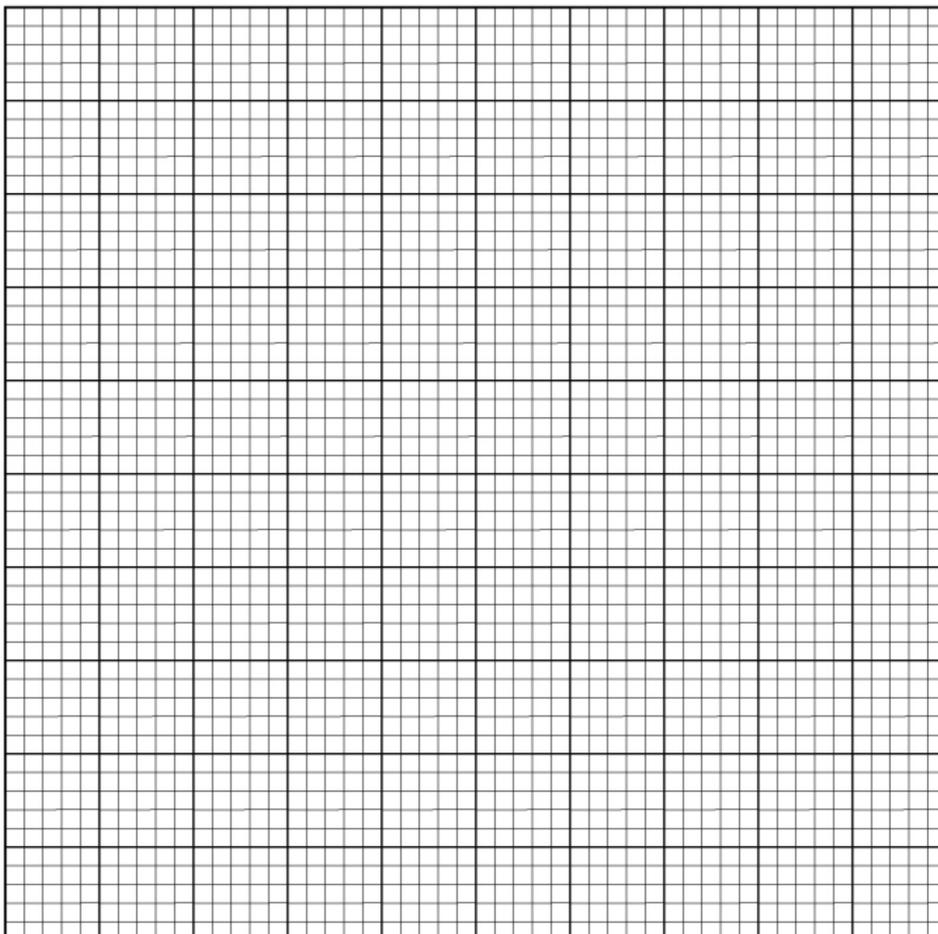
(iii) Complete Table 1.1 by filling in the missing heading.

Table 1.1

time/min	
	A	B
0		
2		
4		
6		
8		
10		

[4]

(b) On the grid, construct line graphs for the temperatures of the two boiling tubes using your results in Table 1.1. Join your points with ruled lines.



[5]

(c) State, using your graph, the temperature of the water in boiling tube **A** at 5 minutes. Show on the graph how you obtained your answer.

..... [2]

(d) State the dependent variable in this investigation.

..... [1]

(e) Explain the importance of:

(i) wrapping boiling tube **A** with cotton wool.

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

(ii) closing each boiling tube quickly with the rubber stopper.

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

(f) Describe and explain your results from Table 1.1.

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

(g) Describe **two** ways to improve the method of this investigation to ensure that the results are reliable.

1
.....
2
..... [2]

(h) A larger boiling tube, without cotton wool round it, was completely filled with hot water at the same temperature you started with, stoppered and the temperature of the water measured every 2 minutes for 10 minutes. The readings were compared with those of boiling tube **B**.

Predict and explain the results of this experiment stating the conclusion that could be drawn about the rate of heat loss in larger and smaller mammals.

prediction
explanation
..... [2]

[Total: 21]

2 You are provided with two peanut seeds in Petri dish **C** and a maize seed in Petri dish **D**. You are going to examine these seeds and test them for fats.

(a) Gently separate the two halves of one of the peanuts to show its internal structure.

Examine the internal structure using a hand lens.

Make a large drawing of the half of the peanut that contains the embryo.

[3]

Label on your drawing:

- the part that develops into the root system as **E**
- the part that provides nutrients to the growing embryo as **F**
- the part that protects the seed while in dormancy as **G**

[3]

(b) You are going to carry out the test for fats in the peanut and maize seed provided.

Label one of the test-tubes provided **C** and the other one **D**.

Chop, using the scalpel knife and the tile provided, the second peanut into fine pieces and put them into test-tube **C**.

Rinse both the scalpel knife and the tile.

Chop the maize seed into fine pieces and put them into test-tube **D**.

(i) State the importance of rinsing the scalpel knife and tile after chopping the peanut.

.....
 [1]

(ii) Suggest a reason for chopping the seeds into small pieces before testing them for fats.

.....
 [1]

(iii) Describe how you will carry out the test for fats in test-tubes **C** and **D**.

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

(iv) Carry out the test for fats in the two test-tubes and record your observations and conclusions.

observation in test-tube **C**

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

observation in test-tube **D**

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

(c) Design an experiment that you could carry out to compare the amount of reducing sugars in peanut and maize seeds.

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..... [5]

[Total: 19]

