EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

BIOLOGY **6884/03**

Paper 3 Practical Test **October/November 2024**

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 your answers in dark blue or black pen.
You may use an HB pencil for any diagrams, graphs or rough working.
Do **not** use staples, paper clips, glue or correction fluid.
Do **not** write on the bar code.

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.

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

Question 1

You are going to investigate the effect of an enzyme on a substrate.

You are provided with two test-tubes, **1** and **2**, containing starch solution and two test-tubes, **A** and **B**, each containing 2 cm^3 of amylase solution.

Carry out the following procedure:

1 Add the 2 cm^3 of amylase solution **A** to the starch solution in test-tube **1**.

2 Shake the test-tube to mix the solutions then place it in a test-tube rack.

3 Using the pipette/dropper, take a drop of the mixture from test-tube **1** and place it on a spotting tile. Add a drop of iodine solution to it.

(a) (i) Observe and record the final colour of the drop.

colour of drop from test-tube **1** ..... [1]

4 Clean the pipette/dropper by filling it with water from the beaker labelled 'water for washing' and emptying it into the beaker labelled 'waste water.' Do this several times after each use of the pipette/dropper in this investigation.

5 Add the 2 cm^3 of amylase solution **B** to the starch solution in test-tube **2**. Shake the test-tube to mix the solutions then place it in a test-tube rack. Using the pipette/dropper, take a drop of the mixture from test-tube **2** and place it on a spotting tile. Add a drop of iodine solution to it.

(ii) Observe and record the final colour of this drop.

colour of drop from test-tube **2** ..... [1]

6 Raise your hand so that a supply of water at a temperature of 35 °C – 45 °C can be provided.

7 Place test-tubes **1** and **2** in this water-bath and leave them for 10 – 20 minutes.

While waiting answer questions **1(b) – 1(d)** and begin Question **2**.

(b) State a reason for leaving the test-tubes in the water-bath for 10 – 20 minutes.

.....

..... [1]

(c) State the importance of cleaning the pipette/dropper after each use.

.....

..... [1]

(d) Suggest why a temperature of 35 °C – 45 °C was provided for the test-tubes.

.....

..... [1]

After 10 – 20 minutes:

8 Using the pipette/dropper, take a drop of the mixture from each of the test-tubes **1** and **2** and place it in the spotting tile. Add a drop of iodine solution to both.

(e) Observe and record the final colours of these drops and state conclusions you can make from them.

colour of drop from test-tube **1** .....

conclusion .....

colour of drop from test-tube **2** .....

conclusion ..... [4]

9 Using a pipette/dropper, add 10 drops of the mixture from test-tube **1** to the clean test-tube **3**.

10 Using a pipette/dropper, add 10 drops of the mixture from test-tube **2** to the clean test-tube **4**.

You are going to test these samples in test-tubes **3** and **4** for the presence of reducing sugars.

(f) Describe how you will carry out the tests for reducing sugars.

.....

.....

..... [2]

11 Carry out the tests. If you need hot water, raise your hand and it will be provided.
Caution: It will be hot.

(g) Record your observations and state conclusions you can make from them.

test-tube **3** observation .....

conclusion .....

test-tube **4** observation .....

conclusion ..... [4]

[Turn over

(h) Suggest a reason for the results you obtained when the amylase solution from test-tube **2** was used in this investigation.

.....

..... [1]

(i) **(i)** State the dependent variable in this investigation.

..... [1]

(ii) State **two** variables that should have been kept constant during this investigation.

1 .....

2 ..... [2]

(j) State how reliability of the investigation could be improved.

.....

..... [2]

(k) Design an investigation into the effect of pH on the action of amylase using similar laboratory apparatus to that used in this investigation.

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..... [6]

[Total: 27]

Question 2

You are provided with specimens **W1**, a seed and **W2**, a fruit containing seeds.

Open **W2** and remove one of the seeds.

(a) Complete Table 2.1 by stating **two** visible differences between **W1** and the seed from **W2**.

Table 2.1

	W1	**seed from W2**
difference 1		
difference 2		

[2]

(b) (i) Remove the testa (outer covering) from the seed **W1**.

Using a scalpel, separate the two halves of the seed and examine their inner surfaces.

In the space below, make a large drawing of the half of the seed which has the embryo attached.

[4]

(ii) **On your drawing**, draw a line from one end to the other of its longest length.

Measure and record this length as the longest length of the drawn seed **W1**.

length of drawn seed .....

Measure the longest length of the seed **W1** and record it.

length of seed **W1** ..... [3]

[Turn over

(iii) Use your measurements to calculate the magnification of your drawing compared to the seed **W1**. Give your answer to two decimal places.

magnification ……... [2]

(c) Suggest a method by which the seeds in **W2** may be dispersed, giving a reason for your suggestion.

method .....

reason ..... [2]

[Total: 13]

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