Candidate Name | Centre Number | Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

4025/3

BIOLOGY

PAPER 3 Practical Test

NOVEMBER 2018 SESSION 1 hour 30 minutes

Candidates answer on the question paper.
Additional materials:
As listed in Instructions to Supervisors
Electronic calculator
Pencil (B or HB is recommended)
Soft clean eraser
ruler (cm/mm)

TIME 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES
Write your name, centre number and candidate number in the spaces at the top of this page.
Answer **all** questions.
Write your answers in the spaces provided on the question paper.
Use a sharp pencil for your drawings.

Coloured pencils and crayons should **not** be used.

INFORMATION FOR CANDIDATES
The number of marks is given in brackets [ ] at the end of each question or part question.

FOR EXAMINER'S USE	
1	
2	
TOTAL	

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[Turn over

For Examiner's Use

1 (a) You are required to investigate properties of enzymes. You are provided with unboiled potato cubes labelled **A** and a boiled potato cube labelled **B**, hydrogen peroxide solution, boiling tubes labelled, **X**, **Y** and **Z**.

NB: Caution hydrogen peroxide is harmful to skin.

Pour hydrogen peroxide solution into boiling tubes **X** and **Y** to a depth of about 2 cm.

Carefully drop one potato cube **A** into boiling tube **X** and one potato cube **B** into boiling tube **Y**. Observe the boiling tubes.

(i) Record the observations in **Table 1.1**.

Table 1.1

tube	observations
X	
Y	

[2]

(ii) Suggest the purpose of tube **Y**.

_____ [1]

Pour hydrogen peroxide into boiling tube **Z**.

Add the other potato cube **A** into boiling tube **Z**.

Test the gas produced using a glowing splint.

1

For Examiner's Use

1 (a) (iii) Describe the observations for the test.

[1]

(iv) Identify the gas produced.

[1]

(v) Draw a conclusion from the investigation.

[2]

(vi) Using a labelled diagram, show how you carried the test.

[3]

For Examiner's Use

1 (b) (i) Design a procedure to investigate the effect of pH on enzyme activity.

[6]

(ii) State any **two** possible sources of error in the procedure in **(b) (i).**

[2]

(iii) For **one** source of error stated in **(b) (ii)**, suggest a possible solution.

[1]

(iv) State any **one** method of presenting data from the procedure in **(b) (i).**

[1]
[Total:20]

2 You are to investigate the inheritance of a single trait in living organisms using a model. You are provided with five containers labelled P_1, P_2, **A**, **B** and **C**.

P_1 and P_2 contain a mixture of 25 white beads and 25 red beads each.

Shake containers P_1 and P_2 to mix the beads thoroughly.

Pick a bead from each of the containers P_1 and P_2 at the same time randomly.

If you pick both red, place them into container **A**, red and white place in container **B** and both white place in container **C**.

Record the results in **Table 2.1.**

NB: two beads picked represent an individual.

Repeat picking the beads randomly at the same time until all the beads in P_1 and P_2 are finished.

Table 2.1

beads pair/container	tally	number
red, red – **A**		
red, white – **B**		
white, white – **C**		

(a) **(i)** Complete **Table 2.1.** [6]

(ii) Suggest how it can be ensured that the picking of beads is random.

_____

_____ [1]

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(iii) State what each bead represents.

_____ [1]

(iv) Determine the ratio of the three genotypes.

_____ [1]

(v) Given that red is dominant, describe the genotypes represented by each of the three containers.

A _____

B _____

C _____ [3]

(vi) State the type of inheritance demonstrated in this investigation.

_____ [1]

(vii) The expected ratio, 1:2:1, of offspring genotypes may not be obtained.

Suggest a condition for this ratio to be obtained.

_____

_____ [1]

(b) You are provided with organism **T**.

Study organism **T** using a hand lens.

(i) Name organism **T**.

_____ [1]

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(ii) Deduce, with reasons, the kingdom to which organism **T** belongs.

[3]

(iii) State the roles of such organisms in the ecosystem.

[2]

[Total:20]