Candidate Name	Centre Number	Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

COMBINED SCIENCE 4003/3

PAPER 3 Practical Test

SPECIMEN PAPER 1 hour 30 minutes

Candidates answer on the question paper
Additional materials:
As listed in instructions to Supervisors
Calculator (optional)
30 cm ruler

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 **both** questions.

Write your answers in the spaces provided on the question paper.

Use a sharp pencil for your drawings. Coloured pencils or crayons should **not** be used.
You should show the essential steps in any calculation and record all experimental results in the spaces provided in the question paper.

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	

This question paper consists of 5 printed pages and 3 blank pages.

For Examiner's Use

1. You are required to investigate the effect of concentration on plant tissue.

You are provided with 5 potato cylinders placed in distilled water, four solutions, **A**, **B**, **C** and **D**, in beakers, a stop watch and a ruler.

The length of each of the five potato cylinders was 5 cm before being placed in distilled water and left over night.

(a) **(i)** Measure the initial length of each of any four cylinders and record it in **Table 1.1**.

Table 1.1

solution	initial length /cm	final length/cm	change in length/cm
A			
B			
C			
D			

[11]

Place one potato cylinder in each of the corresponding solutions, **A**, **B**, **C** and **D,** and immediately start a stopwatch. Leave the apparatus to stand for twenty minutes while you proceed to **question 2**.

After 20 minutes, measure the final length of each cylinder and record it in **Table 1.1**.

Calculate and record the change in length in **Table 1.1**.

(ii) Beside the change in length, state any other observation made between potato cylinders in distilled water and those from the solutions.

_____

_____

_____ [1]

For Examiner's Use

b **(i)** Identify, giving a reason, the solution with the potato cylinder which lost the most water.

solution_____

reason _____

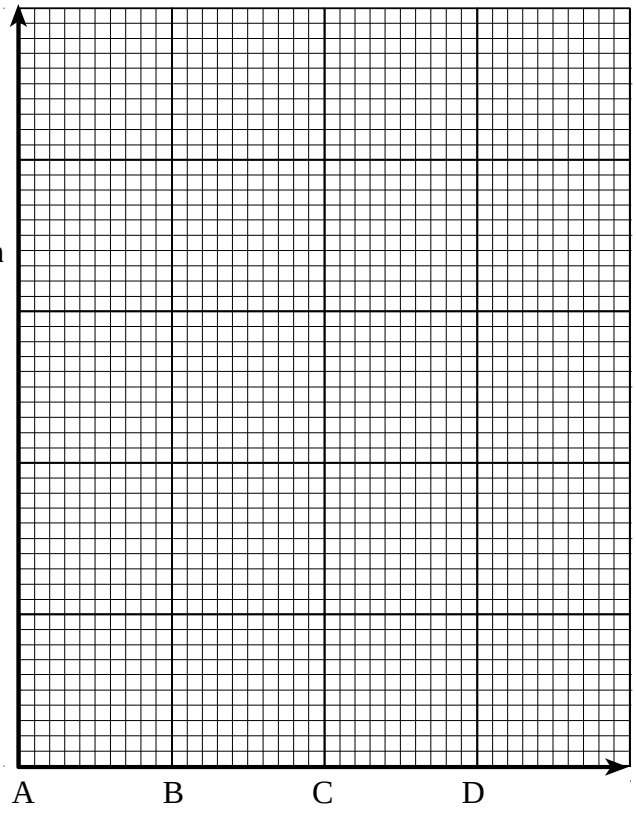
_____ [2]

(ii) Name the process that led to the changes observed.

_____

_____ [1]

(c) Plot a graph of change in length of the potato cylinders against the solution.



[3]

For Examiner's Use

(d) Suggest **two** ways of improving the experiment.

1._____

2._____ [2]

[Total:20]

2. You are required to compare the reactivity of two metals A and B, by reacting each metal with dilute hydrochloric acid, HC*l*.

You are provided with two test tubes labelled **A** and **B**, a thermometer, a test tube rack, a measuring cylinder, dilute hydrochloric acid, metal **A** and metal **B**.

(a) **(i)** Measure 5 cm^3 of dilute hydrochloric acid and pour it into the test tube labelled **A**.

Measure 5 cm^3 of the dilute hydrochloric acid and pour it into the test tube labelled **B**.

Place metal **A** into test tube **A** and metal B into test tube B at the same time.

Record, in **Table 2.1**, all the observations made in each of the test tubes, clearly stating any differences observed.

Table 2.1

Observations in test tube A	Observations in test tube B
1.	
2.	
3.	
4.	

[11]

For Examiner's Use

(a) **(ii)** Measure the temperature of the solutions in test tubes **A** and **B** and compare them.

_____

_____

_____ [2]

(iii) Suggest **two** other factors that should be maintained to make the comparison of the results fair.

_____

_____ [2]

(b) State the general products of the reactions.

_____

_____ [2]

(c) State, with a reason, the metal which is more reactive.

_____

_____

_____ [2]

(d) State **one** precaution that should be taken during the experiment.

_____

_____ [1]

[Total:20]

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