Candidate Name	Centre Number	Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

PHYSICS 4023/3

PAPER 3 Practical Test

SPECIMEN PAPER 2 hours

Candidates answer on the spaces provided on the question paper.
Additional materials:
As listed in Instructions to Supervisors
A4 sheet (bond paper)
Electronic calculator and/or Mathematical tables
Graph paper

TIME 2 hours

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.
For each of the questions. You are expected to record all your observations as soon as these observations are made. All your answers should be written in the spaces provided on the question paper. An account of the method of carrying out the experiments is **not** required.

INFORMATION FOR CANDIDATES

Additional sheets of graph paper should be used only if it is necessary to do so.
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 7 printed pages and 1 blank page.

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1 In this experiment you will determine the specific heat capacity of water.

(a) **(i)** Set up the apparatus as shown in **Fig 1.1**

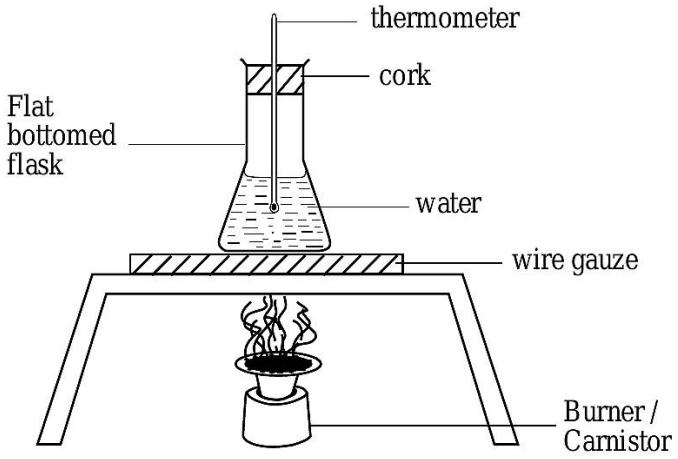


Fig 1.1

(ii) Pour 100ml of water in the flask.

(iii) Simultaneously apply heat and start timing.

(iv) Record time taken for temperature to raise by 3°C in the **Table 1.1.**

Table 1.1

Volume /cm^3	**time/s**
100.0	
150.0	
200.0	
250.0	
300.0	

[5]

(v) Using other volumes in **Table 1.1,** repeat **(a) (iii)** and **(iv)** to complete **Table 1.1.**

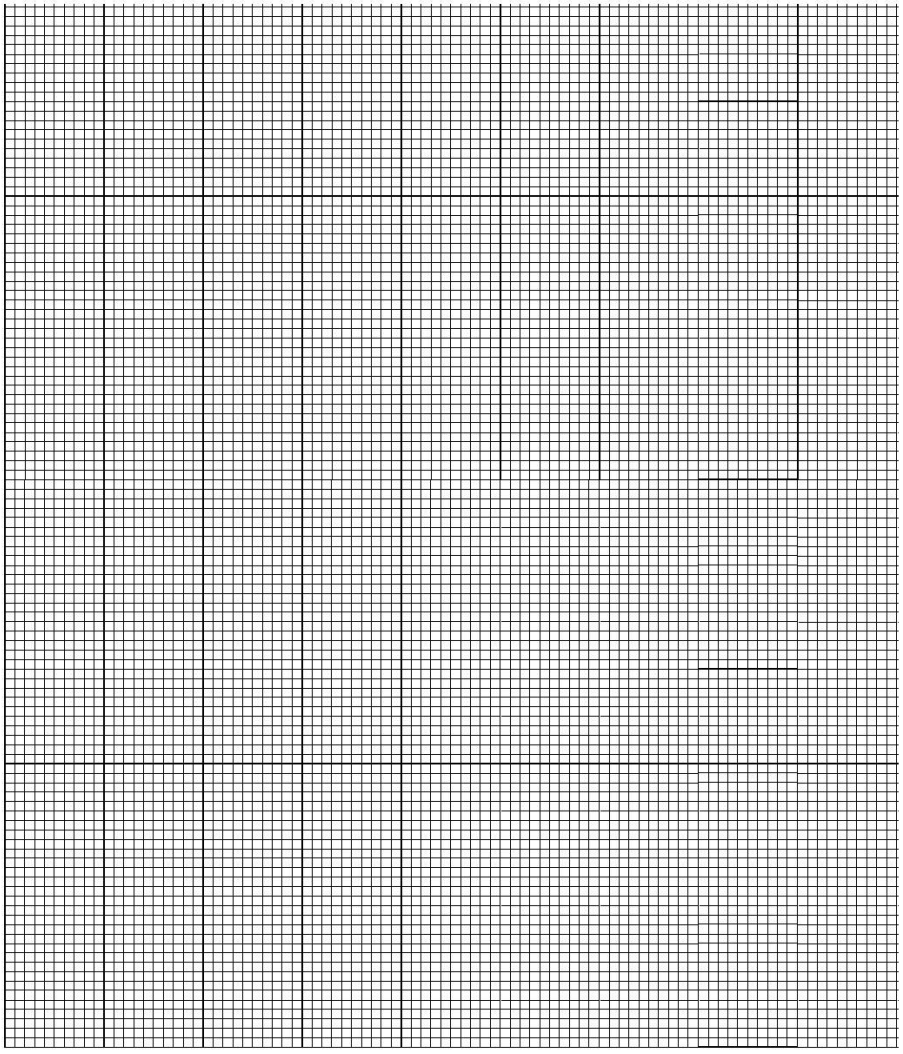
1 **(b)** **(i)** Given that 1 cm^3 weighs 1 gram, complete **Table 1.2**

Table 1.2

Mass (g)					
Time (s)					

[2]

(ii) Plot graph of mass ($y-$ axis) against time ($x-$ axis).



[4]

(iii) State the relationship between time and mass.

_____

_____ [1]

(c) **(i)** Determine the gradient from the graph.

[3]

(ii) Theory suggests that

$$m = \frac{3\,300}{c}t$$

Determine the value of c.

[3]

(iii) Suggest **two** ways of improving the accuracy of this experiment.

_____

_____ [2]

2 In this experiment you will determine the resistance of a fixed resistor.

(a) Set up the apparatus as shown in **Fig 2.1.**

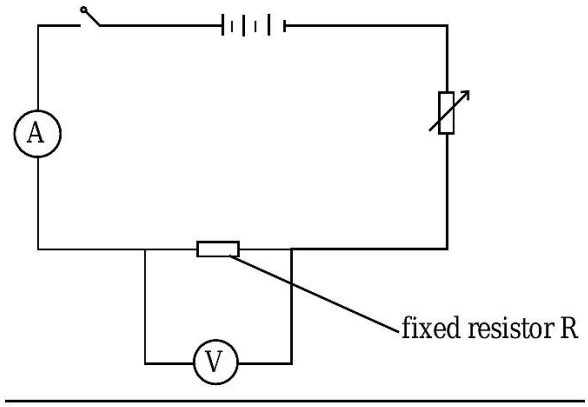


Fig 2.1

(b) **(i)** Adjust the variable resistor until the ammeter reads 0.02 A.

Record this with the corresponding voltage in the table.

(ii) Repeat **(b)(i)** with other measurements of **I** in **Table 2.1**.

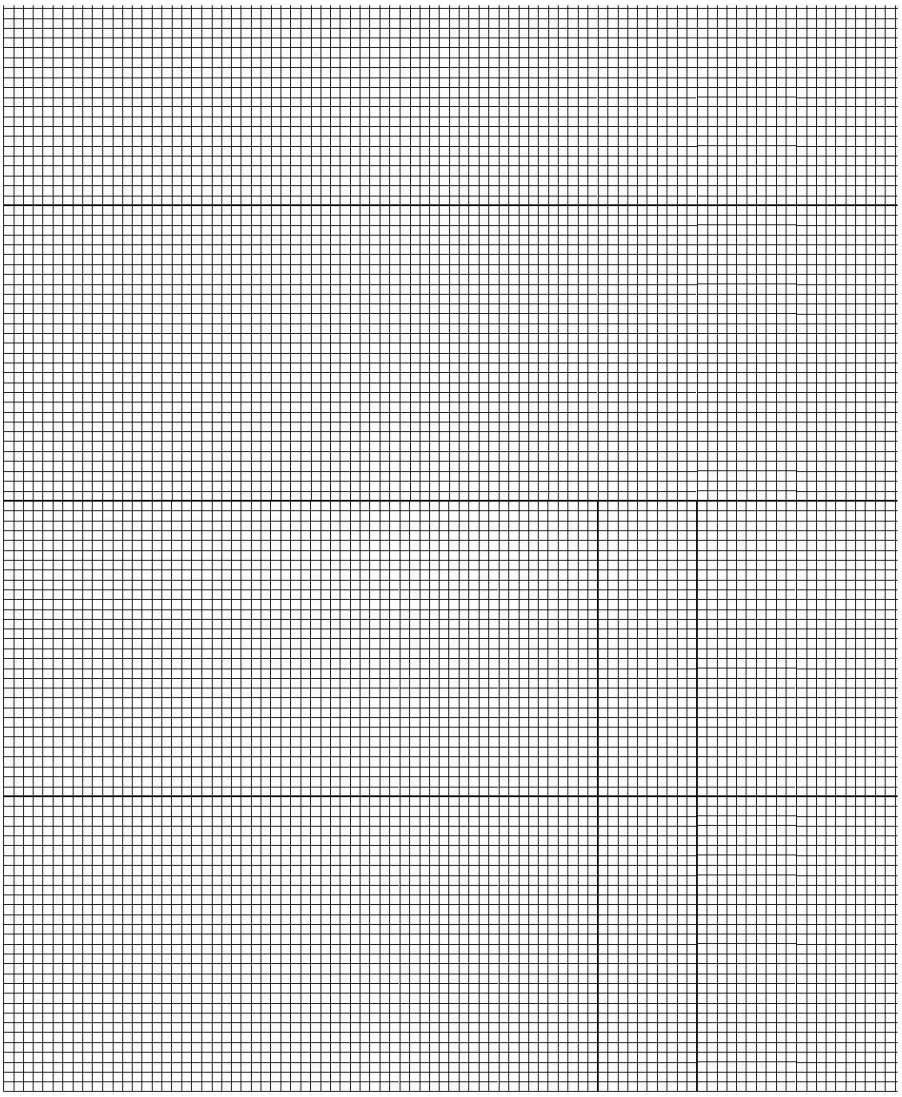
(iii) Calculate the values of R and find the average.

(iv) **Table 2.1**

I/	**V/**	**R = $\frac{v}{I}$ /**
0.02		
0.04		
0.06		
0.08		
0.10		
		AVERAGE R.

[10]

(c) **(i)** Plot a graph of V (y-axis) against I (x-axis).



[4]

(ii) Determine the gradient of this graph

[3]

(iii) Comment on the values in **b (iii)** and **c (ii)**.

_____

_____ [3]

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