Name: ………………………………………………………………… Admission No: ……………………...................

Date: ……………….…………..…................................................. Candidate’s Signature:…………………………….

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**PHYSICS**

Paper 3 (Practical)

**Time: 2 ½ Hours**

***Kenya Certificate of Secondary Education (K.C.S.E)***

**Physics**

Paper 3

**INSTRUCTIONS TO THE CANDIDATES:**

* *Write your* ***name*** *and* ***index number*** *in the spaces provided above.*
* ***Sign*** *and* ***write*** *the* ***date*** *of the examination in the spaces provided above.*
* *You are supposed to spend the first* ***15*** *minutes of the* ***2 ½*** *hours allowed for this paper reading the whole paper carefully.*
* *Marks are given for a clear record of the observation actually made, their suitability, accuracy and the use made of them*

*.*

**FOR EXAMINER’S USE ONLY**

|  |  |  |
| --- | --- | --- |
| Question | Maximum Score | Candidate’s Score |
| 1 | 20 |  |
| 2 | 20 |  |
| TOTAL | 40 |  |

*This paper consists of 7 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.*

**QUESTION ONE**

***You are provided with the following;***

- A 40ml glass beaker

- A Bunsen burner

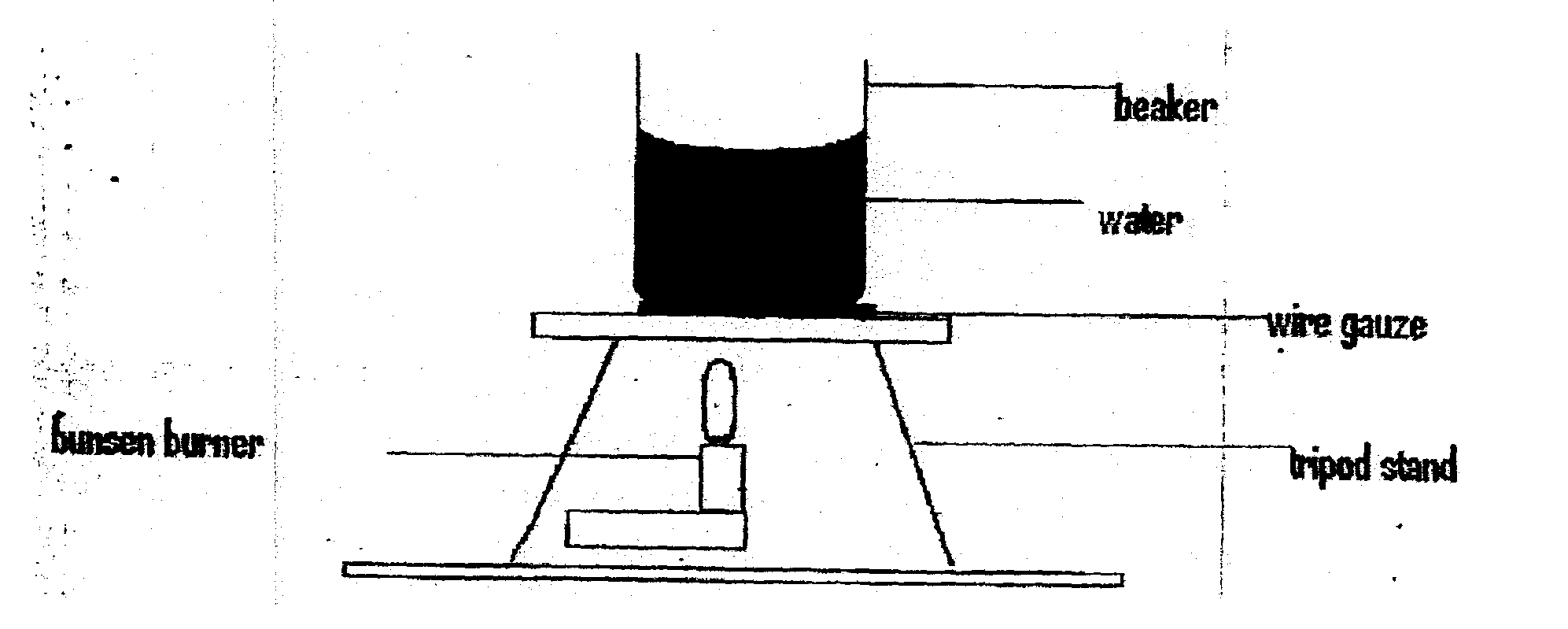
- A thermometer

- A stop watch

- A tripod stand and a measuring cylinder 100ml

- A wire gauze

- A source of heat

Set up the apparatus as shown in the diagram below.

**Beaker**

**Water**

**Wire gauze**

**Tripod stand**

**Burnsen burner**

Measure 100cm3 of water and pour it into the beaker. Take the initial temperature of the water.

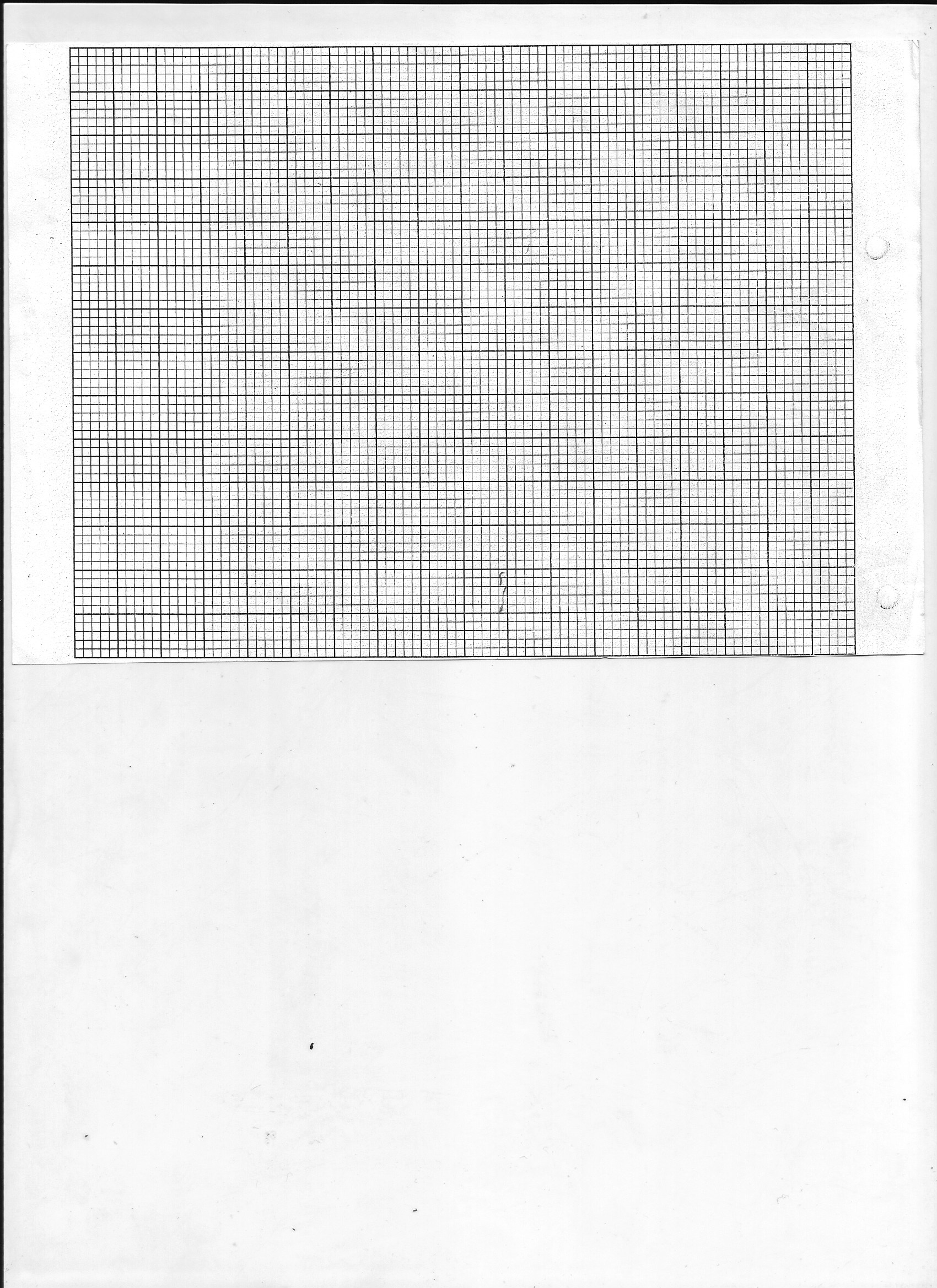
T0…………………………………………….. (1 mark)

Now heat the water to a temperate of 90°C. Switch off the gas tap and place a thermometer into the beaker and start the stop watch when the temperature is 65oC. Take the temperature T°C of water every two minutes.

Record your results in the table below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Time (t) (min) | 2 | 4 | 6 | 8 | 10 | 12 | 14 |
| Temperature (T) oC |  |  |  |  |  |  |  |
| (T-T0)0 |  |  |  |  |  |  |  |
| Log (T-T0) |  |  |  |  |  |  |  |

(i) Plot a graph of Log (T - To) against Time (t). (5mks)



(ii) Find the value K of log(T — To) when t =0 (2mks)

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Determine the antilog of K. (2mks)

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(iii)Calculate the temperature of the surrounding TR using the expression

Antilog K =65 - TR. (3mks)

**QUESTION TWO**

***This question has two parts A and B. answer both parts.***

**PART A**

***You are provided with the following:***

- A meter rule

- Two identical l00g masses

- About 200m1 of liquid L in 250m1 beaker

- Three pieces of thread, each about half metre long

- Stand with clamps

- Tissue paper.

***Proceed as follows:***

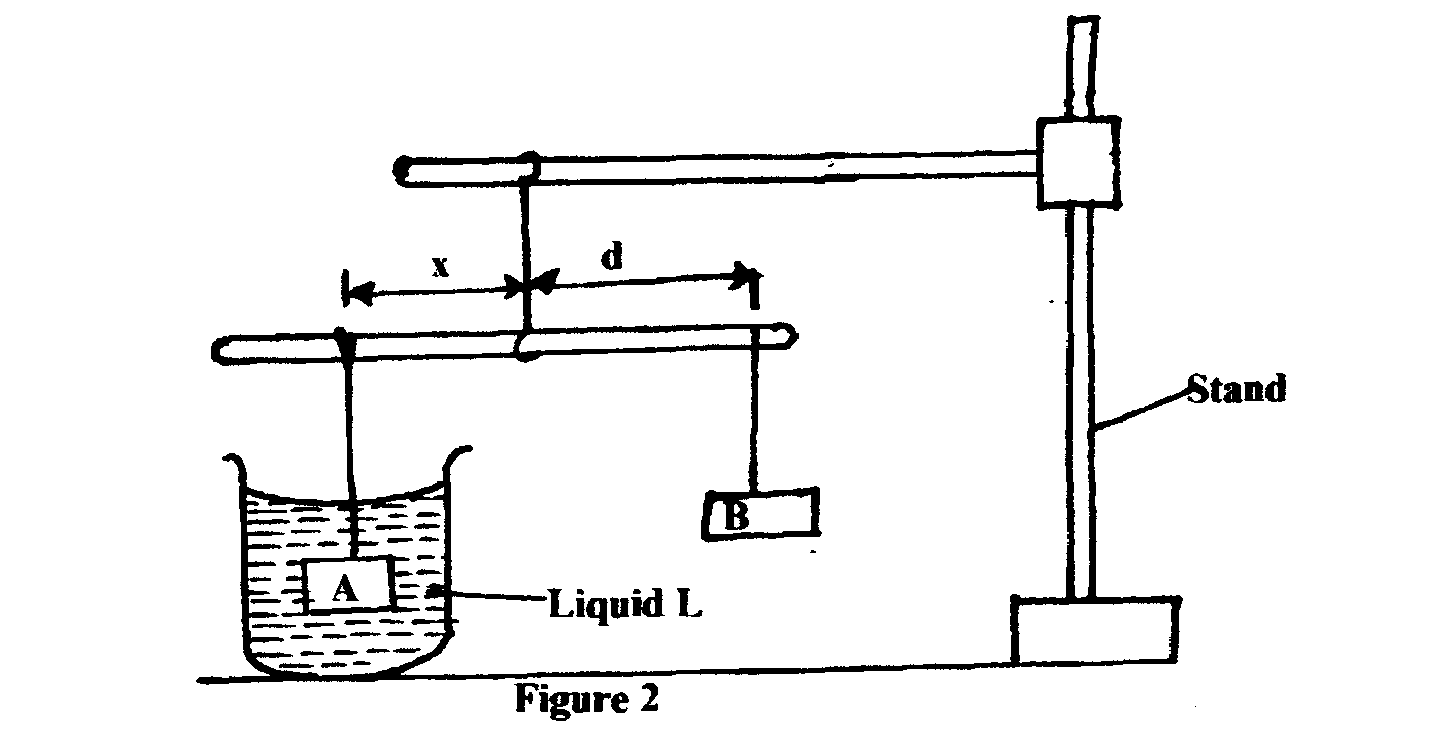
(a) Using a stand and one piece of thread, suspend the metre rule in air such that it balances

horizoally. Record the position of the centre of gravity. G.

G=\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_mm

NOTE: The mere rule should remain suspended at this point through out the experiment.

(b) Set up the apparatus as in figure 2 below.



**Liguid L**

**Stand**

**Figure 2**

Suspend the mass A at a distance x = 50mm. Adjust the position of mass B until it balances mass

A immersed in liquid L.

Record the distance d, of mass B from the pivot.

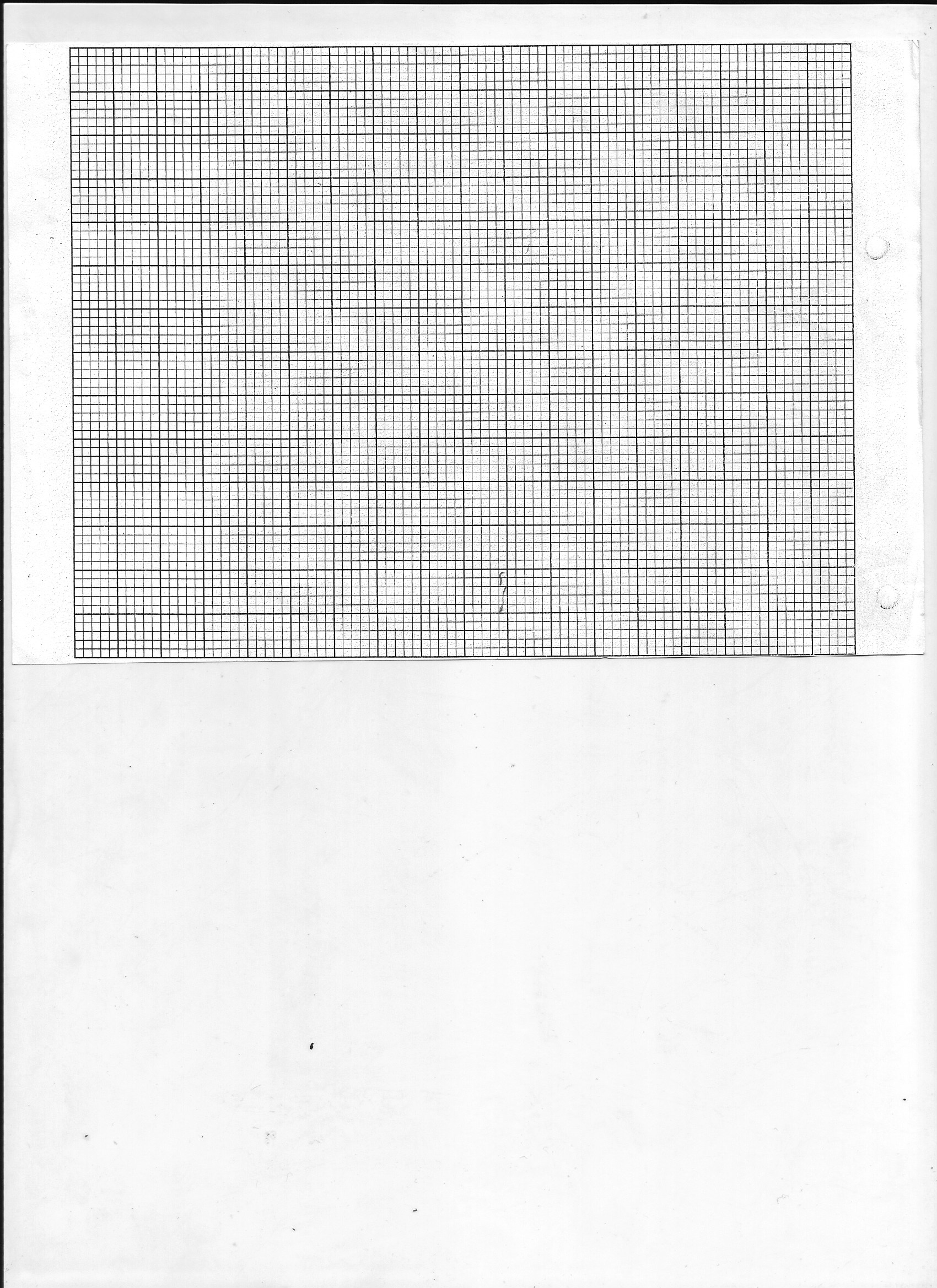
Repeat the same process for other values of x in table 2 below and

complete the table.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| x(mm) | 50 | 100 | 150 | 200 | 250 | 300 |
| d(cm) |  |  |  |  |  |  |

(3 mks)

(c) Plot a graph of d (y axis) against x. (5mks)



(d) Determine the slope, S of the graph. (2mks)

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(e) Given , where F is the apparent weight of object A in the liquid L and W is the actual

weight of A, find:

(i) The value of F (2mks)

……………………………………………………………………………………………………….

……………………………………………………………………………………………………….

(ii) The up thrust U, Using the equation U= W-F. (3mks)

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**PART B**

***You are provided with the following:***

- A concave mirror with holder

- A screen

- A meter rule

- A candle

- A match box (to be shared)

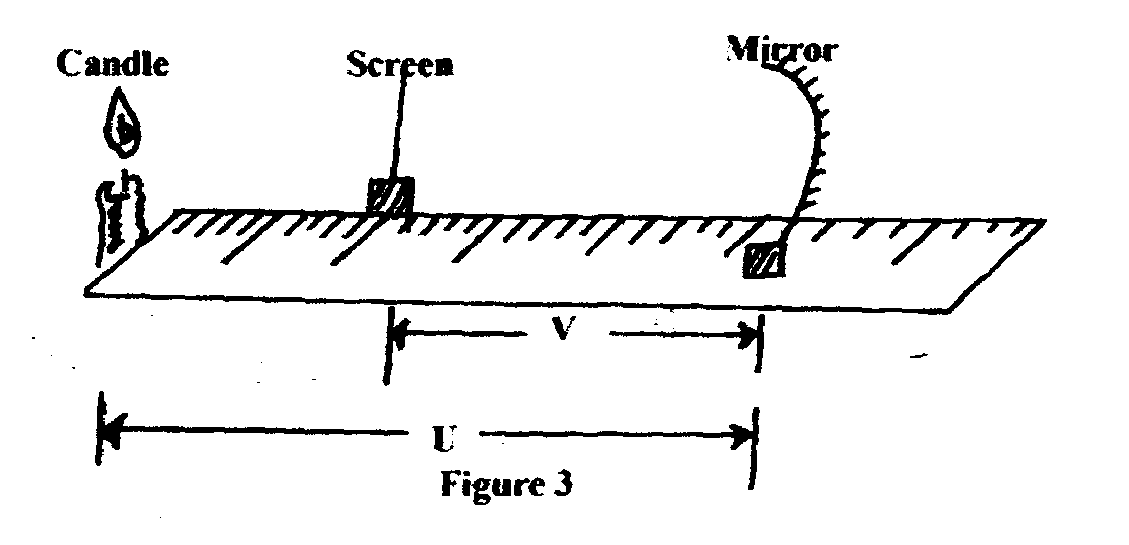
***Proceed as follow:***

(f) Set up the apparatus as in figure 3 below.

**Candle**

**Screen**

**Mirror**



**Figure 3**

**U**

(g) Put the object at a distance u = 30cm from the mirror. Adjust the position of the screen until a

sharp image is formed on the screen. Record the distance V.

(h) Repeat procedure (b) above for the distance u = 40cm and record the new distance V. complete the table 3 below.

|  |  |  |  |
| --- | --- | --- | --- |
| U(cm) | V(cm) | m=V/U | (m+1) |
| 30 |  |  |  |
| 40 |  |  |  |

(i) Given , calculate the values of *f* hence determine the average value fav (3mks)

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