NAME_____ INDEX NO_____

DATE _____ SIGNATURE _____

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PHYSICS
FORM FOUR
1ST TERM 2016
1 HR.

Kenya Certificate of Secondary Education
PHYSICS PP3
FORM FOUR 1ST TERM EXAMINATION 2016

INSTRUCTIONS TO CANDIDATES

- Write **your name, index number, Date and sign** in the spaces provided
- Answer **ALL** the questions in the spaces provided in the question paper.
- You are supposed to spend the first 15 minutes of the 2 $^1/_2$ hours allowed for this paper reading the whole paper carefully before commencing your work.
- Marks are given for clear record of observations made, their suitability, accuracy and the use made of them.
- Candidates are advised to record their observations as soon as they are made.
- **Non-programmable** silent electronic calculators and KNEC mathematical table may be used.
- This paper consists of 6 printed pages. Candidates should check to ensure that all pages are printed as indicated and no questions are missing

For Examiner's Use Only

Section	Maximum score	Candidates score
Q1	20	
Q2	20	

This paper consists of 6 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

PART A

You are provided with the following apparatus

- 36cm long wire coiled on a rod labeled ***M***
- Ammeter
- Voltmeter
- Micrometer screw gauge (to be shared)
- One dry cell***(1 .5V)***
- Switch S

a) Connect the circuit as shown in ***figure 1***

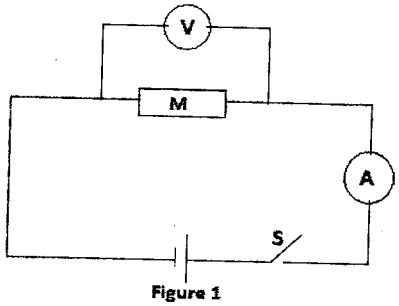


Figure 1

b) Using the micrometer screw gauge , measure the thickness of the wire labeled M (1 mark)

c) Calculate the cross-section area of the wire in meters (3 marks)

d) Close the switch and record the ammeter and voltmeter reading

Ammeter reading .....A (1 mark)

Voltmeter reading .....V (1 mark)

e) Calculate the value of K from the equation given that d is the length of the wire ,I is the ammeter reading while V is the voltmeter reading $A = \frac{KIL}{V}$ (3 mark)

f) Name the physical quantity represented by K (1mark)

PART B

You are provided with the following:-

- A boiling tube.
- Some dry sand.
- A liquid in a measuring cylinder labeled L.
- Half meter rule.
- A vernier calipers (to be shared)
- A weighing machine (one per form)
- Tissue paper.
- A measuring cylinder.

Proceed as 'lows:

g) Measure .ength of the boiling tube.

h = _____ cm

(1mark)

h) Put a little amount of sand in the boiling tube and place it in the measuring cylinder which is almost filled with liquid L. Add sand, little by little until the tube floats upright as shown in ***figure 2***

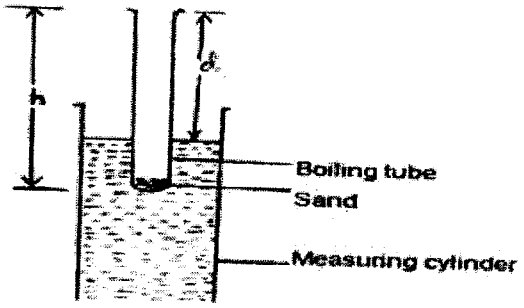


Figure 2

Measure the length, d, of the boiling tube which is above the liquid.

d= _____ cm

(1mark)

i) Determine the length, t, of the boiling tube which is immersed in the liquid.

t = _____ cm

(1mark)

j) Remove the boiling tube from the measuring cylinder, wipe it dry (on the outside) and measure its mass, m, including the sand inside.

m = _____ g

(1mark)

k) Measure the external diameter, D, of the boiling tube.

D = _____ cm

(1mark)

l) Determine the external radius, R

R = _____ cm

(1mark)

m) Using the formula $M = 12p\pi R^2$, determine **P** for the liquid.

P_____

(4 marks)

QUESTION 2

2. ***You are provided with the following apparatus:***

- A candle
- A lens holder
- A convex lens
- A screen
- A metre rule
- An object

Proceed as follows:

Using object infinity outside the room, focus its image on the screen provided. The image should be as sharp as possible and inverted. Measure the distance from the lens to the screen ***hcm.*** Repeat the same for three other values of h. Record your results and then calculate the average value of the three results, ***hcm.***

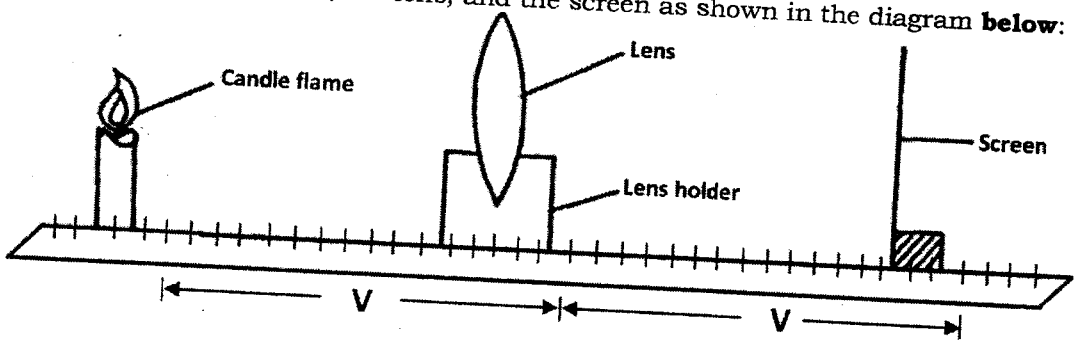
First reading of h (1mark)

Second reading of h (1mark)

Third reading of h (1mark)

The average value of h (1mark)

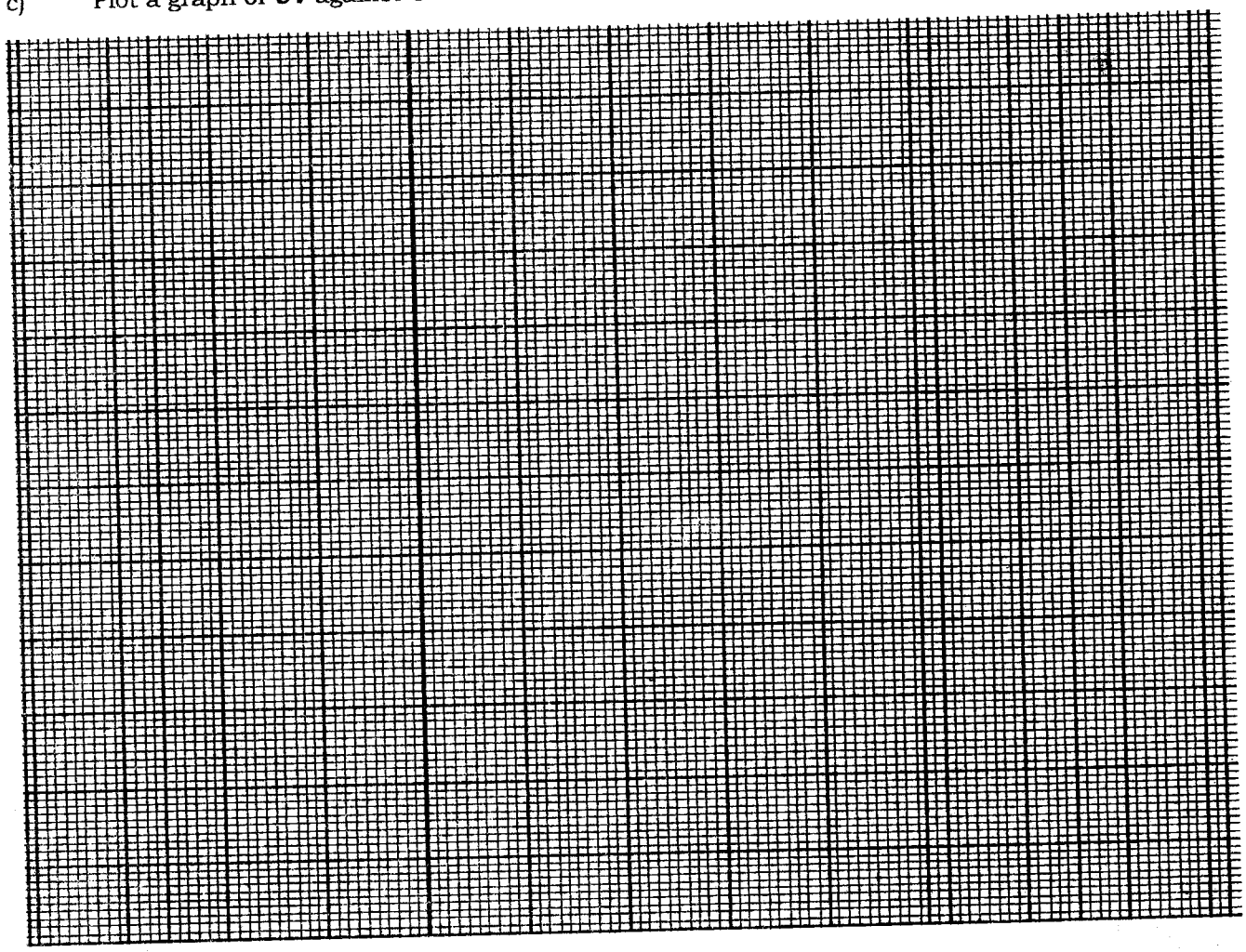
a) Arrange the candle flame, the lens, and the screen as shown in the diagram **below**:



b) For each particular value of u, adjust the position of the screen until a sharp image appears on the screen. Measure distance v cm. Repeat the experiment for each of the other values of u, and record the results in the table below: (7marks)

Distance u(cm)	**Distance v(cm)**	**UV(cm^2)**	**U + V (cm)**
12			
15			
18			
21			
24			
27			
30			

c) Plot a graph of ***UV*** against ***U + V*** (5marks)



d) From your graph, calculate the slopes.

(2marks)

e) Calculate the value of k given that $KH = S$

(2marks)