Name ..... **Index Number** ..... /
.....

Candidate's Signature

.....

232/3

Date

PHYSICS.....

PAPER 3 (PRACTICAL)

JULY/AUGUST 2013

TIME: 2 1/2 HOURS

KIKUYU DISTRICT INTERSCHOOLS EVALUATION

KENYA CERTIFICATE OF SECONDARY EDUCATION

232/3

PHYSICS

PAPER 3 (PRACTICAL)

TIME: 2 1/2 HOURS

Instructions to candidates

1. Write your **Name**, **Index Number**, school and date in the spaces provided above.
2. **Sign** and **write** the date of examination in the spaces provided above.
3. Answer **ALL** the questions in the spaces provided.
4. All writing **MUST** be clearly shown in the spaces provided. .

For Examiner's use only

Question	1 (e)	1(f)	1 (g)	1(h)	2(b)	2 (d)	2 (e)	2(f)	2 (g)	TOTAL
Maximum score	6	5	3	6	1	7	5	3	4	**40**
Candidates score										

PART A

You are provided with the following:

- A white screen with cross wires labelled O
- A lens and a lens holder
- A white screen labelled S
- A meter rule
- A candle

Proceed as follows:

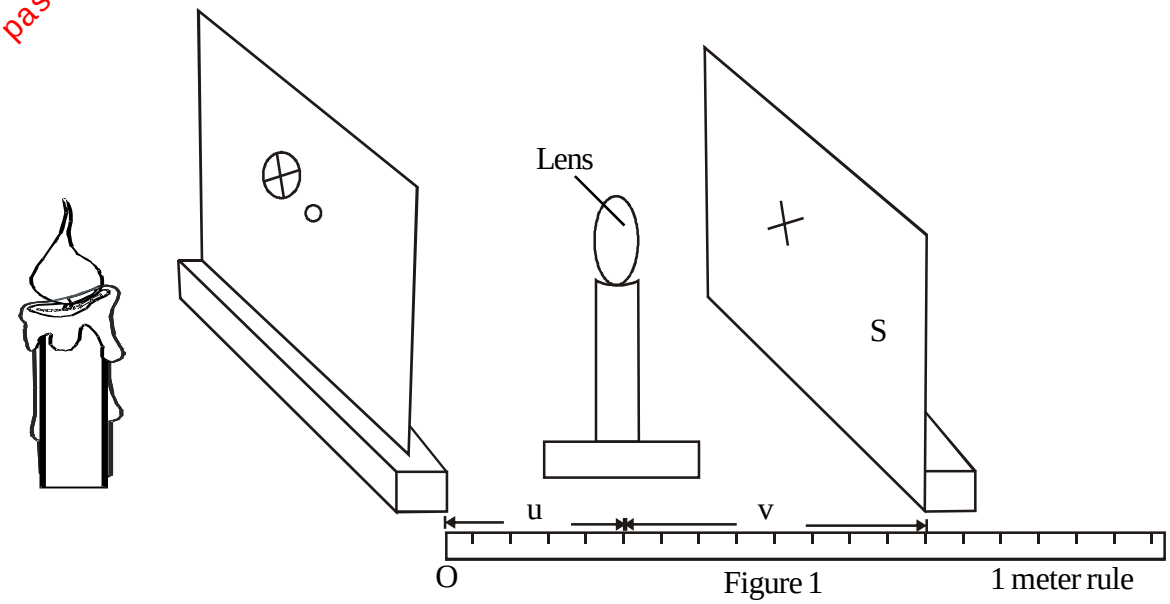

Figure 1

(a) Set up the apparature as shown in fig. 1

(b) Position the lens so that the object distance u = 20cm

(c) Adjust the screen S so that a sharp image of the cross wires is formed on the screen S. Measure the image distance v. Record the value of u and the corresponding value of v in table 1.

(d) Repeat (b) and (c) above for value of u = 20cm, 25cm, 30cm, 35cm, 40cm and 45cm.

(e) Complete table 1.

u(cm)	20	25	30	35	40	45
v(cm)						
u + v (cm)						
uv(cm^2)						

Table 1. (6 marks)

(f) On the grid provided plot a graph of uv(y axis) against u + v (5 marks)

(g) Determine the slope of the graph. (3 marks)

PART B

You are provided with the following

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

Proceed as follows:

(h) (i) Measure the length of the boiling tube

h = _____cm ($^1/_2$ marks)

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

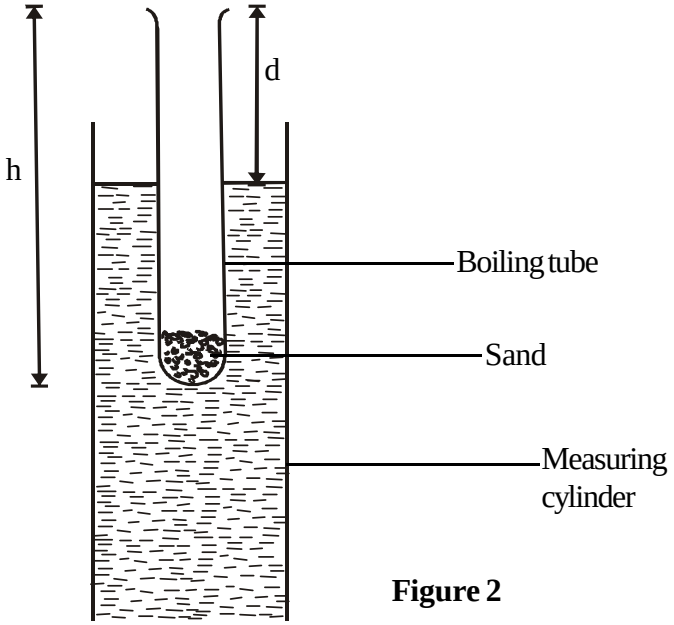

Figure 2

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

d = _____cm (½ marks)

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

t = _____cm (½ marks)

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

m = _____cm (½ marks)

(v) Measure the external diameter, D, of the boiling tube.

D = _____cm (½ marks)

(vi) Determine external radius, R.

R = _____cm (½ marks)

(vii) Using the formula

m= $\rho\, x\, (\pi R^2)$, determine ρ for the liquid.

ρ = _____ (3 marks)

2. You are provided with the following:

- 2 dry cells
- A cell holder
- A nichrome wire mounted on a metre rule
- An ammeter, A
- A voltmeter, V
- A jockey J
- A switch S
- 8 connecting wires.

Proceed as follows:

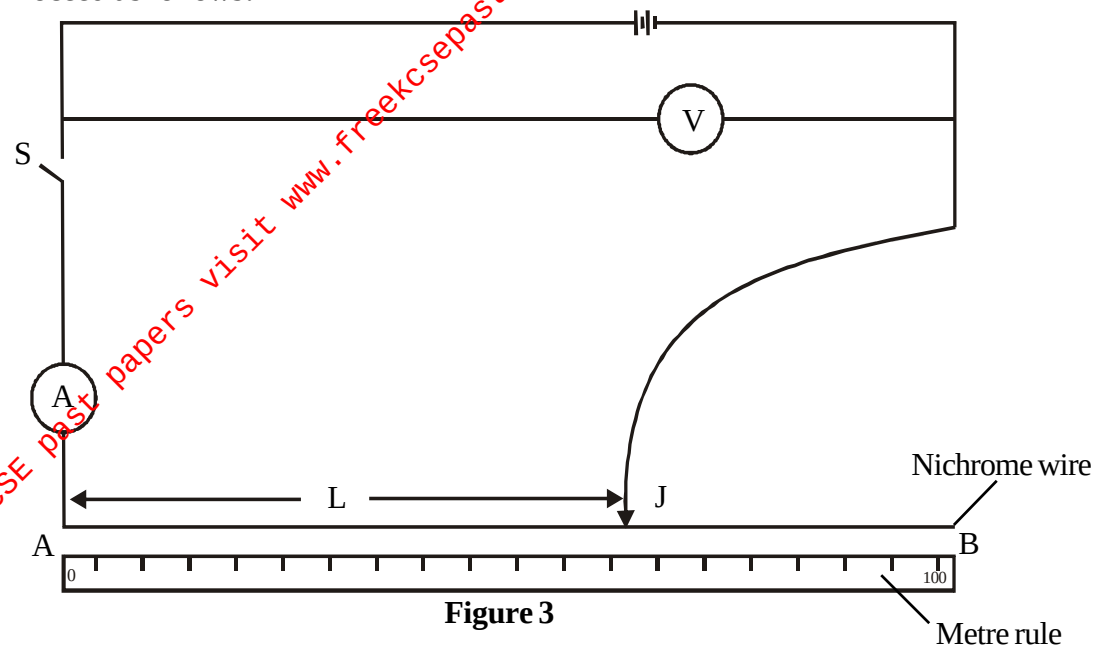

Figure 3

(a) Set up the apparatus as shown in fig. 3.

(b) With the switch open, record the reading E. of the voltmeter.

E = _____ (3 marks)

(c) Place the jockey, J, on the nichrome wire at 100cm mark. Close the switch, read and record the values of 1(ammeter reading) and the corresponding values of V (voltmeter reading) in table 2.

(d) Repeat (c) above for length, L = 70cn, 60cm, 50cm, 40cm and 20cm.

Complete table 2.

L(cm)	**100**	**70**	**60**	**50**	**40**	**20**
1(A)						
V(V)						
E - V(V)						

Table 2 (7 marks)

(e) Plot a graph of ((E - V) (y axis) against I. (5 marks)

(f) Determine the slope of the graph. (3 marks)

_____

_____

_____

_____

_____

(g) Given that E = V + Ir, from the graph determine

(i) The internal resistance, r, of the battery. (2 marks)

_____

_____

_____

_____

(ii) V when I is 0.3A. (2 marks)

_____

_____

_____

_____