NAME: $\qquad$
SIGNATURE: $\qquad$
$\qquad$

## CANDIDATE'S SIGNATURE:

$\qquad$
232 / 3
PHYSICS
PAPER 3
(PRACTICAL)
JULY / AUGUSTS 2014
TIME: $21 / 2$ hgừrs

# NANDI NORTH SUB-COUNTY JOINT EVALUATION 2014 

## Kenya Certificate of Secondary Education (KCSE)

PHYSICS
PAPER 3
TIME: 2 ½ HOURS

## INSTRUCTIONS TO CANDIDATES

(a) Write your Name, Index Number and School in the spaces provided above.
(b) Sign and write the date of Examination in the spaces provided above.
(c) Answer all questions in the spaces provided.
(d) You are supposed to spend the first 15 minutes of the $21 / 2$ hours allowed for this paper reading the whole paper carefully before commencing your work.
(e) Marks are given for a clear record of observations actually made, their suitability, accuracy and the use made of them.
(f) Non-programmable silent electronic calculators and KNEC Mathematical tables may be used in calculations.

FOR EXAMINER'S USE ONLY

## QUESTION 1

| Part A |  |  |  |  | Part B |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Question | (i) | (ii) | (iii) | (iv) | (v) | (vi | (vii) | Question | e | f | g |
| Sub-total |  |  |  |  |  |  |  |  |  |  |  |
| Max score | $1 / 2$ | $1 / 2$ | $1 / 2$ | $1 / 2$ | $1 / 2$ | $1 / 2$ | 3 | Max score | 6 | 5 | 3 |
| Candidate's score |  |  |  |  |  |  |  | Candidate's score |  |  |  |

## QUESTION 2

| Question | c | d(i) | d(ii) | e(i) | e(ii) | f | g | Sub-total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :---: |
| Max score | 7 | 5 | 3 | 1 | 1 | 2 | 1 | 20 |
| Candidate's score |  |  |  |  |  |  |  |  |


| TOTAL SCORE |
| :---: |
| 40 |
|  |

## 1. PART A

You are provided with the following:

- A boiling tube.
- Some dry sand.
- A liquid in a measuring cylinder labelled L.
- Half metre rule.
- A vernier cal ị้̂ers (to be shared)
- A weighifig machine (one per form)
- Tissore paper.
- QA $^{\text {C }}$ measuring cylinder.


## Proceed as follows:

(i) Measure the length of the boiling tube.
h = $\qquad$ cm
(ii) 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 fig. 1

Fig. 1


Measure the length, d , of the boiling tube which is above the liquid.
$\mathrm{d}=$ $\qquad$ cm
(iii) Determine the length, t , of the boiling tube which is immersed in the liquid.
$t=$ $\qquad$ cm
(iv) Remove the boiling tube from the measuring cylinder, wipe it dry (on the outside) and measure its mass, $m$, including the sand inside.
$\mathrm{m}=$ $\qquad$ g
(v) Measure the external diameter $2 \hat{\triangle}$, of the boiling tube.

( $1 / 2 m k$ )
(vi) Determine the external radius, $R$
$R=$ $\qquad$ cm
( $1 / 2 \mathrm{mk}$ )
(vii) Using the formula $m=12 p \pi R^{2}$, determine $p$ for the liquid.

## PART B

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 metre rule.
- A candle.
(a) Set up the apparatus as shown in fig. 2.

(b) Position the lens so that the object distance $u=20 \mathrm{~cm}$.
(c) Adjust the screen S so that a sharp image of the cross wire is formed on the screen $S$. Measure the image distance $v$. Record the value $u$ and the
corresponding value of $v$ in table 1. $\varsigma^{\circ}$
(d) Repeat (b) and (c) above for othervalues of $u$ in table 1.
(e) Complete table 1.


On the grid provided, plot a graph of uv against (u+v)
(5mks)

(g) Determine the slope of the graph and state its significance.
2. You are provided with the following.apparatus:-

- A voltmeter
- An ammeter
- A switch
- 6 connecting wires (one with a crocodile clip)
- 2 new dry cedts.
- A cell hefoder.
- A niف̨ 1 ifome wire mounted on a millimetre scale.


## Procedure

(a) Connect the apparatus as shown in fig. 3

(b) With the crocodile clip at $y, 80 \mathrm{~cm}$ from $x$, close the switch and record the voltmeter reading and the corresponding ammeter reading in table 2.
(c) Repeat the procedure in part (b) for other lengths of $x y$ as shown in table 2. complete the table.

| Length (xy) cm | 80 | 70 | 60 | 50 | 40 | 30 | 20 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Voltmeter reading (V) |  |  |  |  |  |  |  |
| Ammeter reading (A) |  |  |  |  |  |  |  |

(d) (i) On the grid provided, plotag graph of p.d(V) against current I (A).

$\qquad$
(ii) Determine the slope of your graph.
(e) Given that $\mathrm{V}=\mathrm{K}_{1} \mathrm{I}+\mathrm{K}_{2}$ where $\mathrm{K}_{1}$ and $\mathrm{K}_{2}$ are constants, determine:
(i) The value of $\mathrm{K}_{1}$.
(ii) The value of $\mathrm{K}_{2}$.
(f) What quantity do constants $\mathrm{K}_{1}$ and $\mathrm{K}_{2}$ represent?
(g) State the reason why the switch should be open when no readings are being taken.

