Name

School $\qquad$ Date.

## Candidate's signature

$\qquad$

232/3
PHYSICS
Paper 3
PRACTICAL
July / August 2012
Time $21 / 2$ HOUR $\bigotimes^{\varnothing}$

## BURETI DISTRICT JOINT EVALUATION TEST - 2012

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

## INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the spaces provided above.
2. Sign and write the date of examination in the spaces provided above.
3. This paper consists of TWO questions: $\mathbf{1}$ and $\mathbf{2}$
4. ALL working MUST be clearly shown
5. Mathematical tables and electronic calculators may be used

## FOR EXAMINERS USE ONLY

QUESTION 1

|  | a (iv) | a (vii) | a (viii) | a (ix) | a, b | Total |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Maximum Score | 6 | 5 | 3 | 2 | 4 | 20 |
| Candidate's Score |  |  |  |  |  |  |

## QUESTION 2

|  | b | c (i) | c (ii) | c (iii) | Total |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Maximum Score | 10 | 5 | 3 | 2 | 20 |
| Candidate's Score |  |  |  |  |  |


| GRAND TOTAL | CANDIDATE'S SCORE |  |
| :--- | :--- | :--- |
|  | MAXIMUM SCORE | 40 |

## Question 1 Part A

You are provided with the following $a p$ paratus

- Two metre rules (one with a pied as a pointer)
- Two retort stands with clawín and bosses
- Two pieces of thread ab̌out 30 cm and 1 m long
- One helical spring $s^{5}$
- One 200 g masss or two 100 g masses
- A stop waich
- Foursimall pieces of wooden blocks


## Procedure


Fig. 1

(ii) Suspend the ends of the metre rule with spring at 5 cm mark from the end so that the metre rule with the pointer is horizental.
Read the pointer positio $\mathrm{B}_{\mathrm{C}}^{\mathrm{C}}, \mathrm{L}_{0}=$ $\qquad$ cm.
(iii) Hang 200 g on the horizontal metre rule at a length $\mathrm{L}=10 \mathrm{~cm}$ from the spring. Record the extension, e, of the spring in the table below.
(iv) Displace the mass slightly downwards and release it to oscillate vertically. Time for 10 oscillations and record the results in table 1
(v) Reperat (iii) and (iv) for other positions of L of the mass
(vi) $Q^{2}$ Table 1

|  | 10 | 20 | 30 | 40 | 50 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Extension, e (cm) |  |  |  |  |  |
| Time for 10 oscilations (s) |  |  |  |  |  |
| Periodic time, T (s) |  |  |  |  |  |
| $\mathrm{T}^{2}\left(5^{2}\right)$ |  |  |  |  |  |

(vii) Plot a graph of $\mathrm{T}^{2}(\mathrm{y}-$ axis) against extension ' $e$ '

$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
(ix) Gixen that
$e^{\sigma^{x} T^{2} / 2}=\frac{4 \pi^{2} \mathrm{e}}{\mathrm{K}}+C$
Determine the value of K
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$

## Part B

You are provided with the following

- A voltmeter
- An ammeter
- Six connecting wires with crocodile clips
- Two dry cells
- Cell holder
- Resistant wire labelled R , mounted on a carton
- Switch


## Proceed as follows

(a) Set up the circuit as shown in figure 2

## Figure 2



Close the switch. Read and record the ammeter and voltmeter readings
V. V

I .........................A
(b) Determine the resistance of R
$\qquad$
............ ${ }^{\text {s }}$
2. You are peovided with the following apparatus

- A lenas
- CBuns holder
- Candle
- Two screens; one with hole having cross-wires
- Metre rule


## Proceed as follows

(a) Set up the apparatus as in figure 3 with distance $S=42 \mathrm{~cm}$


Without changing the distance $S$ move the lens slowly away from cross-wires until a sharp enlarged inverted image is formed on screen position $L_{1}$. Measure the distance $\mathrm{U}_{1}$ from cross-wires to the lens and record this value in table 2. Keeping distance S, constant move the lens away from cross-wires to a new position $L_{2}$ where a small sharp inverted image is formed on the screen. Measure the new object distance $U_{2}$ and record in table 2. Determine the displacement $d$ of the lens from $L_{1}$ to $L_{2}$ (i.e $d=L_{2}-L_{1}$ )
(b) By setting the distance $S$ to distances $44,46,48,50$ and 52 cm as shown in table 2 repeat procedure (a). Measure and record the corresponding values of U 1 and U 2 in table 2

Table 2

| S (cm) | 42 | $44{ }_{5}{ }^{\text {ei }}$ | 46 | 48 | 50 | 52 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{U}_{1}(\mathrm{~cm})$ |  |  |  |  |  |  |
| $\mathrm{U}_{2}$ (cm) |  |  |  |  |  |  |
| $\mathrm{d}\left(\mathrm{U}_{2}-\mathrm{U}_{1}\right)(\mathrm{cm})$ |  |  |  |  |  |  |
| $\mathrm{d}^{2}\left(\mathrm{~cm}^{2}\right) \quad$ 为 |  |  |  |  |  |  |
| $\mathrm{S}^{2}\left(\mathrm{~cm}^{2}\right) \quad \mathrm{s}^{2}$ |  |  |  |  |  |  |
| $\mathrm{S}^{2}-\mathrm{d}^{2}\left(\mathrm{~cm}^{2 \mathrm{C}^{65}}{ }^{5}\right.$ |  |  |  |  |  |  |



$\qquad$


$e^{\partial(\text { iiii }} \quad$ Given that $S^{2}-d^{2}=4 \mathrm{fS}$, use your graph to determine the focal length of the lens


