

Name.....

Index No.....

School.....

Candidates Signature.....

Date .....

232/3

PHYSICS

Paper 3

PRACTICAL

July/August 2010

2 ½ Hours

**BUNGOMA JOINT EVALUATION TEST - 2010**  
**Kenya Certificate of Secondary Education (K.C.S.E)**

**Instructions to 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 advised to spend the first 15 minutes of the 2 ½ hours given reading the entire question paper.
- This paper consists of **two** sections **A** and **B**
- Marks are given for a clear record of observations actually made, for their suitability and accuracy for the use of them.

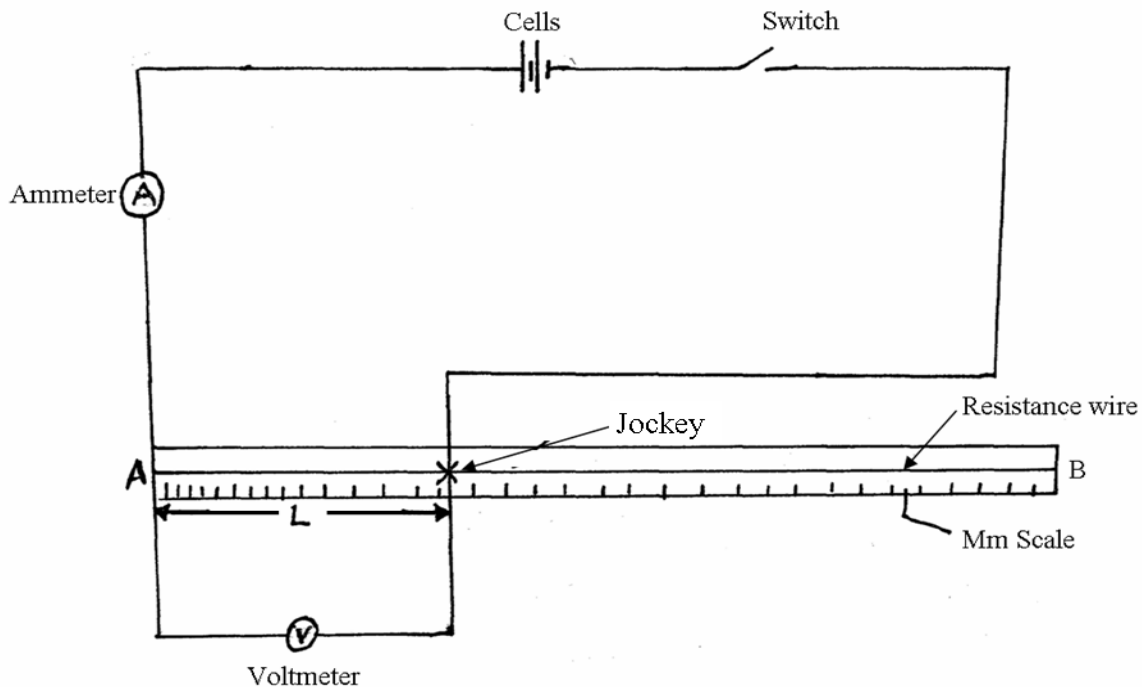
*This paper consists of 7 printed pages. Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing*

**QUESTION 1**

You are provided with the following apparatus.

- Two new dry cells
- An ammeter (0 – 1.0A)
- A voltmeter (0 – 5V)

- A resistance wire AB, mounted on a mm scale.
  - Jockey
  - Cell holder
  - A switch
  - Six connecting wires with crocodile clips on one end. Proceed as follows.
- a) Set up the electrical circuit as shown in figure 1 below.



- b) Close the switch. Connect the leads with the crocodile clips from the switch and the voltmeter to the wire AB such that the length,  $L$ , of the wire  $AB = 0.20\text{m}$ . Measure and record,  $I$ , the current through the wire  $AB$  and the p.d.V. across it. Enter your results in

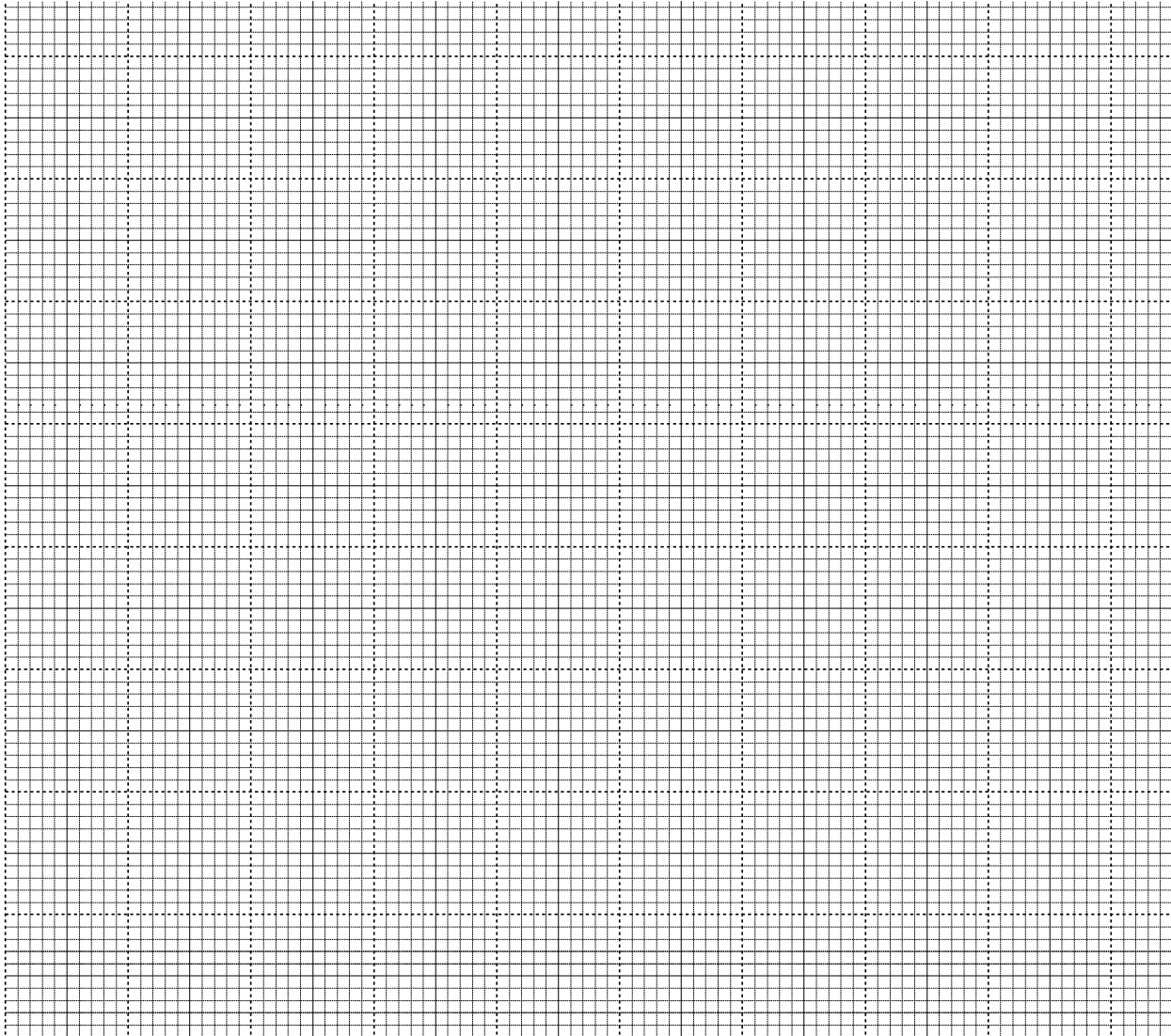
**Table 1.**

- c) Repeat part (b) above for the other values of  $L$ . Record the corresponding values of  $I$  and  $V$ . (5mks)

L (m)	0.2	0.4	0.5	0.6	0.8	1.0
p.d (v)						

I (A)						
$R = \frac{p.d}{I} (\Omega)$						
$\frac{1}{I} (A^{-1})$						

d) On the grid provided, plot a graph of  $\frac{1}{I} (A^{-1})$  against R ( $\Omega$ ) (5mks)



e) Determine the slope, S of the graph (3mks)

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f) Given that the graph obeys the equation

$$\frac{1}{I} = \frac{R}{E} + \frac{r}{E}$$

Determine:

i) the value of E (1mk)

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ii) The value of r (3mks)

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## QUESTION 2

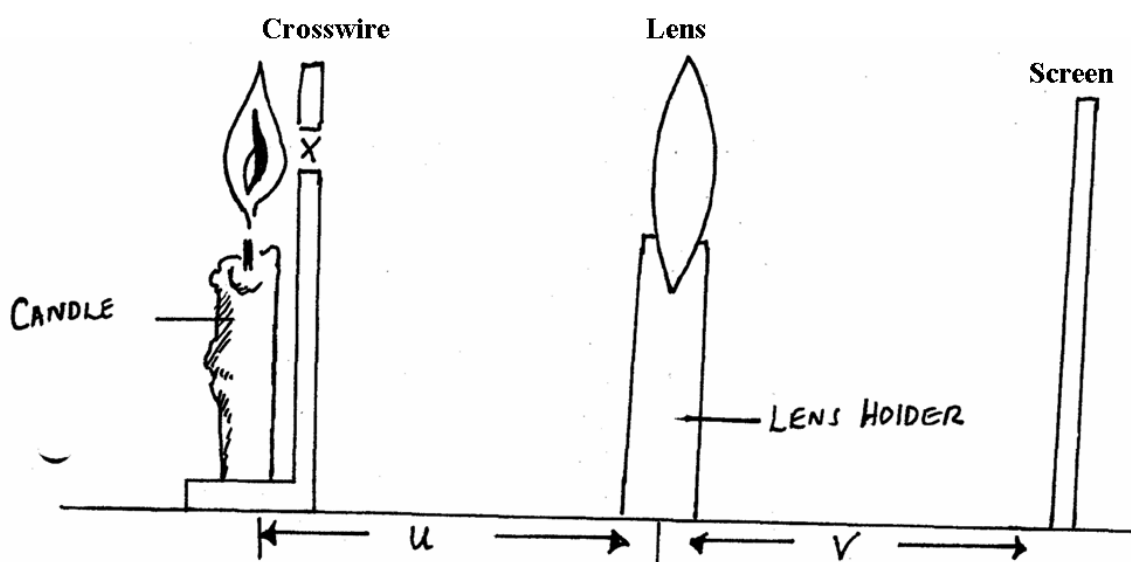
### PART I

You are provided with the following:

- A converging lens
- A lens holder
- A cross wire
- A metre rule
- A white screen
- Candle

Proceed as follows:

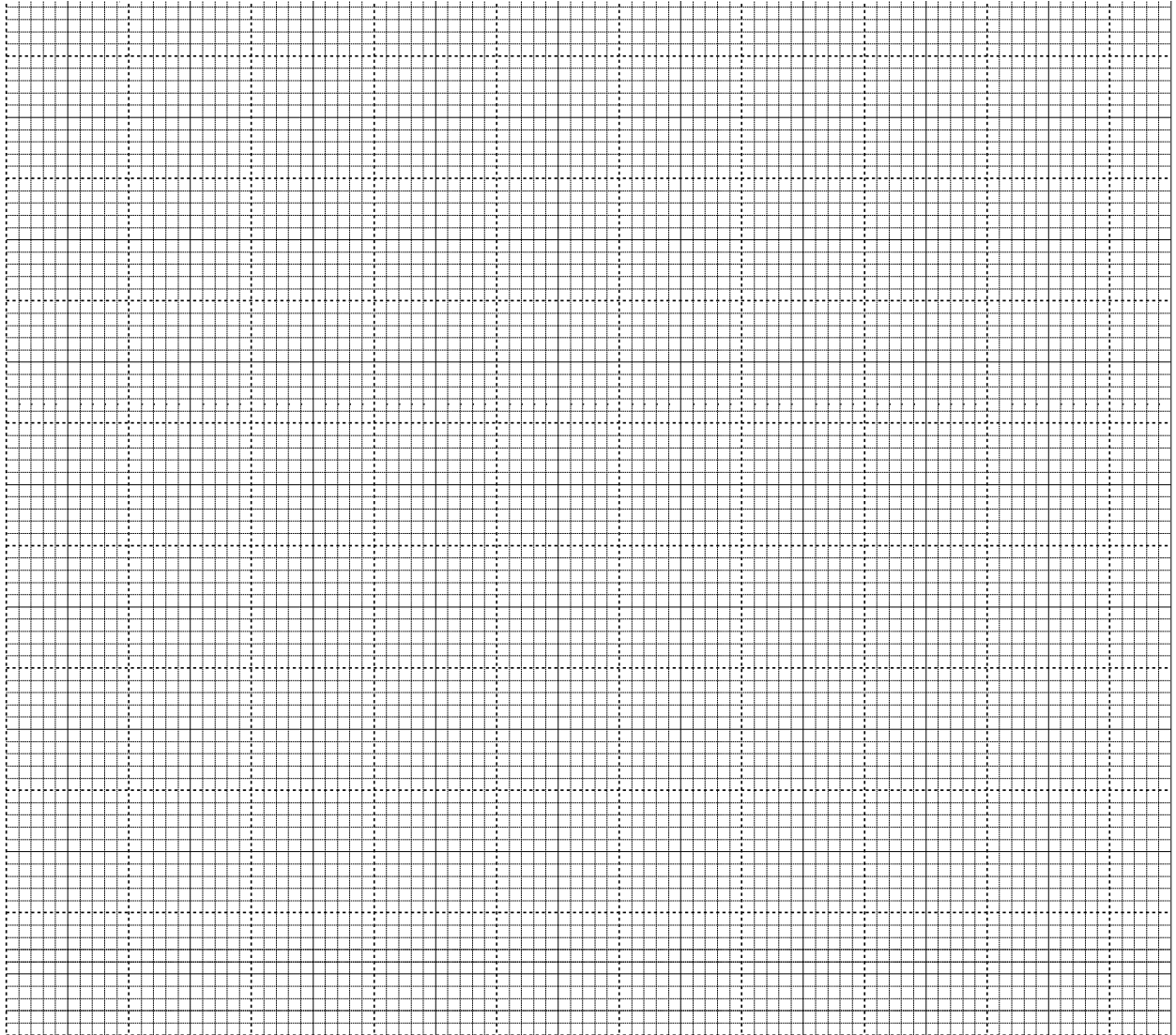
- a) Set up the apparatus as shown in fig 2.



- b) Let the distance,  $u$ , be 30cm. By adjusting the distance of the screen from the lens, determine the distance  $v$  that will give the sharpest image of the crosswires on the screen. Record the value of  $v$ .
- c) Repeat (b) above for other values of  $u$ . (6mks)

$u$ (cm)	30	32	35	50	55	60
$v$ (cm)						
$(u + v)$ cm						

d) On the grid provided, plot a graph of  $(u + v)$ cm (y – axis) against  $u$ (cm) (5mks)



e) From the graph, state the value of

i)  $V$ , where the graph is at a minimum

$V \text{ min} = \underline{\hspace{2cm}}$  cm (1mk)

ii)  $u + v$ , where the graph is at a minimum

$(u + v)\text{min} = \underline{\hspace{2cm}}$  cm (1mk)

f) Given that  $f = \frac{V \text{ min}}{2}$  and also (2mks)

$f = \frac{(u + v) \text{ min}}{4}$  determine the average value of  $F$ .

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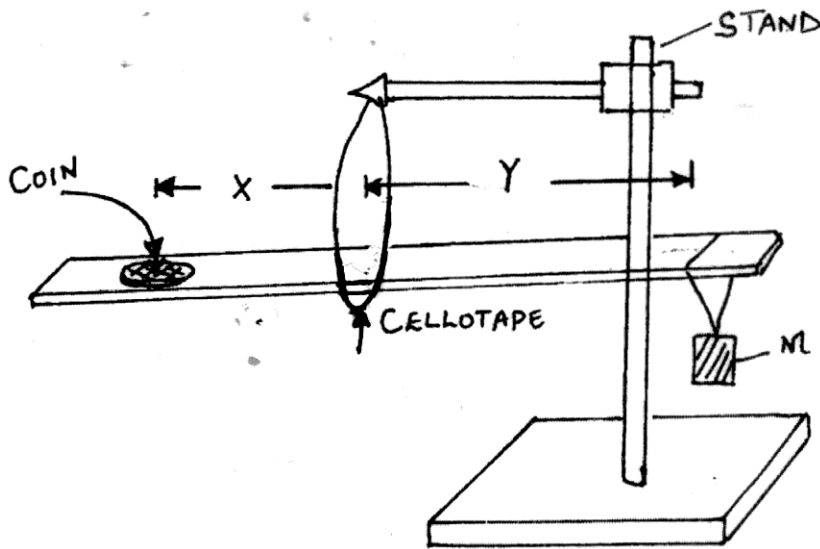
2. **PART II**

You are provided with the following;

- Complete retord stand
- Two pieces of strings
- A meter rule used in part A
- Three coins
- One mass labeled M
- A Piece of cellotape

**Proceed a follows:**

- a) Suspend the metre rule as shown in figure 3, so as to balance. Fix the balance point by using the cellotape.



- b) Place one coin at a distance  $x = 10\text{cm}$  from the balance point.
- c) Adjust the position of mass  $M$  until equilibrium is attained. Measure and record the distance  $Y$ .
- d) Repeat procedure (b) and (c) for the number of coins,  $N$ , given in the table below and calculate the value of  $M$ . (4mks)

No. of coins $N$	1	2	3
Length, $y$ (cm)			
$P = \frac{Y}{N}$			

- e) Find the average value of  $P$ , from the table (1mk)

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