Name: …… **Index No.** ……

School: …… **Candidate's Sign.** …….....

Date: ……

232/3
PHYSICS
PAPER 3
JULY /AUGUST 2011
TIME: 2 ½ HOURS

NYAMIRA DISTRICT JOINT EVALUATION TEST

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

Physics
Practical

INSTRUCTIONS TO THE 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 supposed to spend the first 15 minutes of the 2 ½ hours allowed for this paper reading the whole paper carefully.*
- *Marks are given for a clear record of the observation actually made, their suitability, accuracy and the use made of them.*
- *Record your observations as soon as get them*

For Examiners' Use Only

Question 1	**a (i)**	**(ii)**	**(iii)**	**(iv)**	**(v)**	**b(i)**	**(ii)**
Maximum score	1	6	5	2	1	2	3
Candidates score							

Question 2	**(v)**	**(vi)**	**(vii)**	**(vii)(a)**	**viii(b)**	**ix**	**x**
Maximum score	6	5	3	1	1	2	2
Candidates score							

This paper consists of 4 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. You are provided with the following:
   - a marble with apiece of thread attached.
   - Two wooden blocks
   - Clamp, boss and retort stand.
   - Meter rule
   - ½ metre rule attached to a wooden block
   - Cellotape (2pieces of about 10cm long)
   - Stop watch

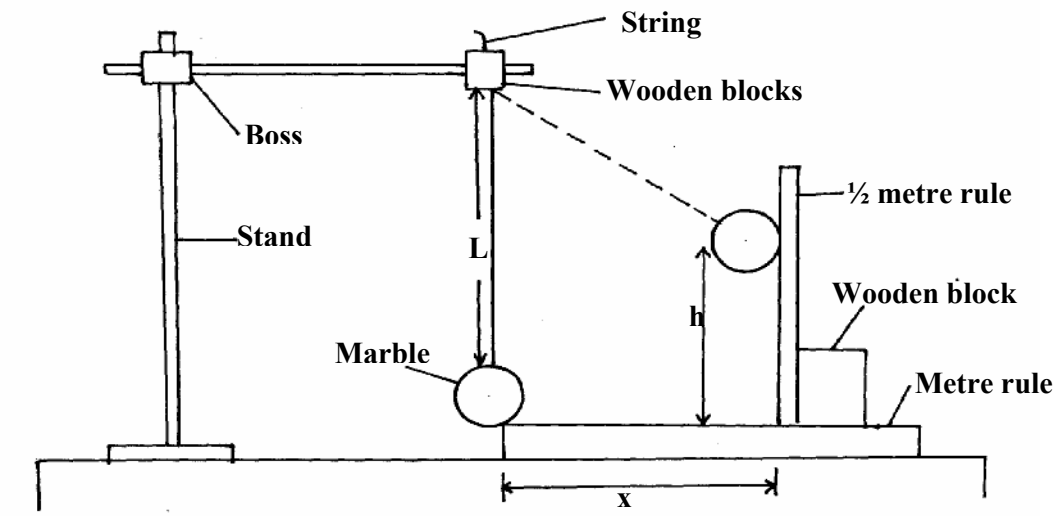
Proceed as follow:

a) fix the thread between the two wooden blocks and fasten the clamp

b) adjust the thread so that the length L shown in figure 1 is 50.0cm. Fix the metre rule horizontally to the bench using the cellotape provided.

c) Adjust the clamp so that the marble is next to the end of the metre rule as shown.

Fig 1

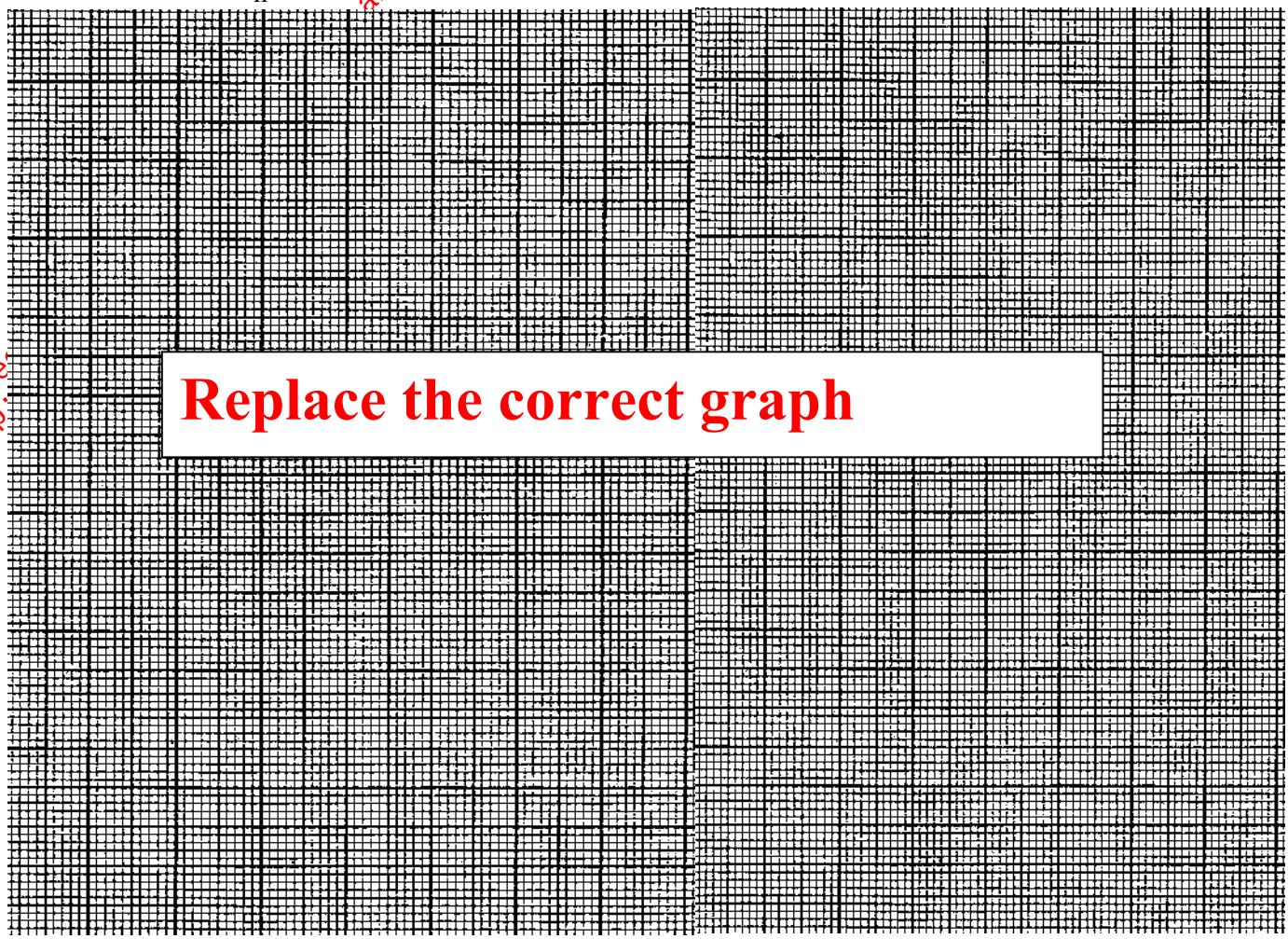


i Displace the marble by a horizontal distance x = 20cm and measure the corresponding vertical displacement h =_____cm (1mk)

ii Repeat the experiment to find h for each of the following values in the table. (Complete the table. (6mks)

x (cm)	h (cm)	$x^2(cm^2)$	$x^2/h(cm)$
20		200	
25		625	
30		900	
35		1225	
40		1600	
45		2025	

iii) Plot the graph of $\frac{x^2}{h}$ (y-axis) against h. Draw the best line through the points (5mks)



iv) Determine the slope of the graph. (2mks)

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v) From the graph, find the value of $\frac{x^2}{h}$ when h = 0 (1mk)

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b) Raise the clamp slightly without changing the length L so that the marble is free to swing.

Displace the marble through a horizontal distance and let it free to swing.

(i) Determine the period, T, for one complete oscillation by timing ten oscillations.

Time for 10 oscillations = _____ (1mk)

Period T = _____ (1mk)

(ii) Calculate the value of p from the following equation.

$T = 2\pi\sqrt{(^{p}/_{g})}$ where $g = 9.8ms^{-2}$ (3mks)

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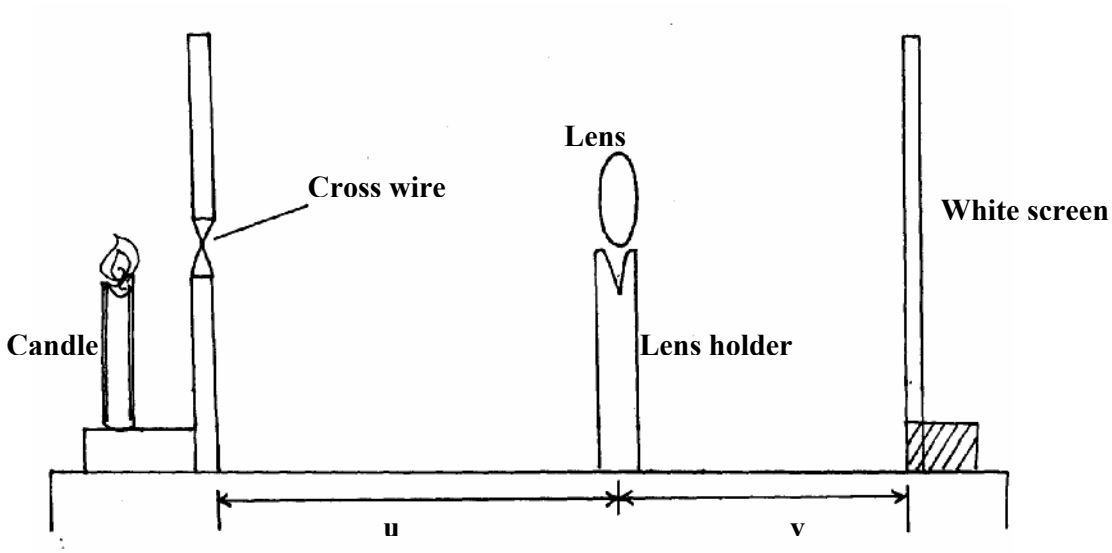
2. You are provided with the following apparatus:

- candle
- lens
- lens holder
- metre rule
- cross wire
- screen
- vernier calipers.

Proceed as follows:

(i) Arrange the apparatus as shown in the figure 2 below.

Fig 2



(ii) Place the cross-wire before the lens so that u = 28cm. The lit candle should be placed close to the cross-wire.

(iii) Adjust the position of the screen until a sharp image is cast on the screen.

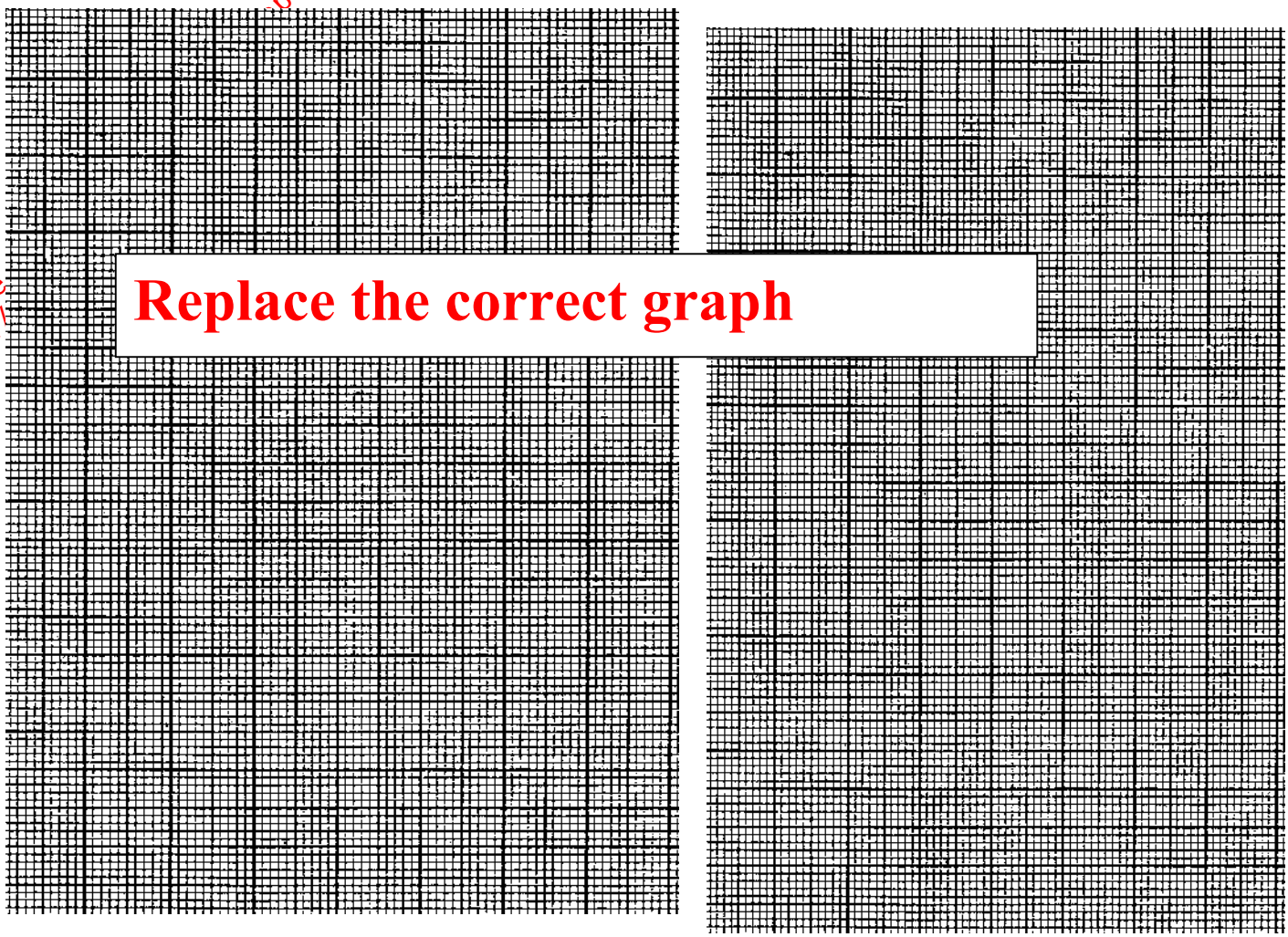
(iv) Measure and record the value of image distance, V, in the table

(v) Repeat the same procedure for the other values in the table. (6mks)

Table 2

U (cm)	28	30	32	34	36	38
V(cm)						
$M = {}^{V}/_{u}$						

(vi) Plot the graph of m (y-axis) against v. (5mks)



(vii) By finding the slope, use the equation $m = {}^{v}/_{f} - 1$ to determine the focal length f of the lens. (3mks)

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(viii) Use the vernier calipers to measure:

(a) thickness (T) of the lens =_____ (1mk)

(b) the diameter (D) of the lens =_____ (1mk)

ix) Determine the angle $\propto$ if $\sin \propto = \frac{D}{4f}$ (2mks)

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x) Calculate R using the formula (2mks)

$$R = \frac{45\,(D^2 + T^2)}{2\pi\propto}$$