NAME…….. **INDEX NO**……/……

SCHOOL…… **DATE** ……...

CANDIDATE'S SIGNATURE……..

232/3
PHYSICS
Paper 3
(PRACTICAL)
JULY/ AUGUST - 2012
Time: 2 ½ Hours

MANGA DISTRICT JOINT EVALUATION EXAM– 2012

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

232/3
PHYSICS
Paper 3
(PRACTICAL)
JULY/ AUGUST - 2012
Time: 2 ½ Hours

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 sections: **A** and **B**
4. Answer **all** the questions in section **A** and **B** in the spaces provided.
6. All working **must** be clearly shown
7. **Mathematical tables** and **silent electronic calculators** may be used.

FOR EXAMINER'S USE ONLY

Question	Maximum Score	Candidate's Score
1		
2		
TOTAL		

This paper consists of 8 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing.

PART I

1. **You are provided with the following apparatus**

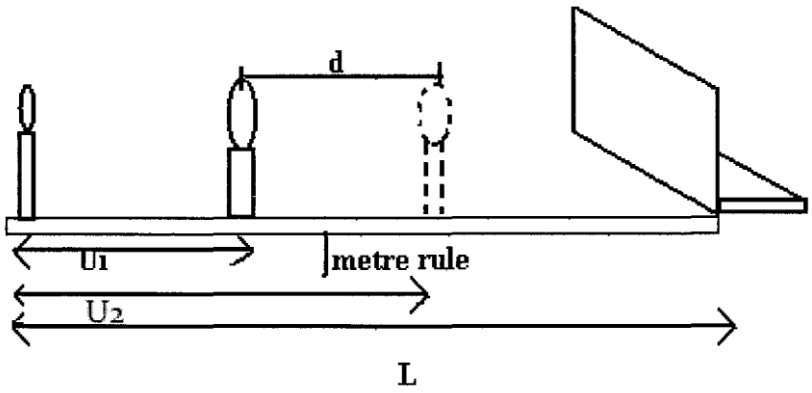
a metre rule

a lens holder

a concave lens

a candle, and

a mounted white screen.



Proceed as follows:

i Set up the apparatus as shown in figure 2 above. (ensure that the candle and the lens are in the line)

ii) With the candle placed a distance L =100cm from the screen ,determine the position of a sharply focused magnified image of the candle on the screen by moving the lens

iii) Determine the distance of the lens from the candle U_1

U_1…… .cm (l mk)

iv) Now move the lens towards the screen until you get a sharply focused diminished image. Determine the new distance of the lens from the candle U_2

U_2……cm (l mk)

v) Calculate the displacement d of the lens (l mk)

d = U_2 — U_1 = ……cm

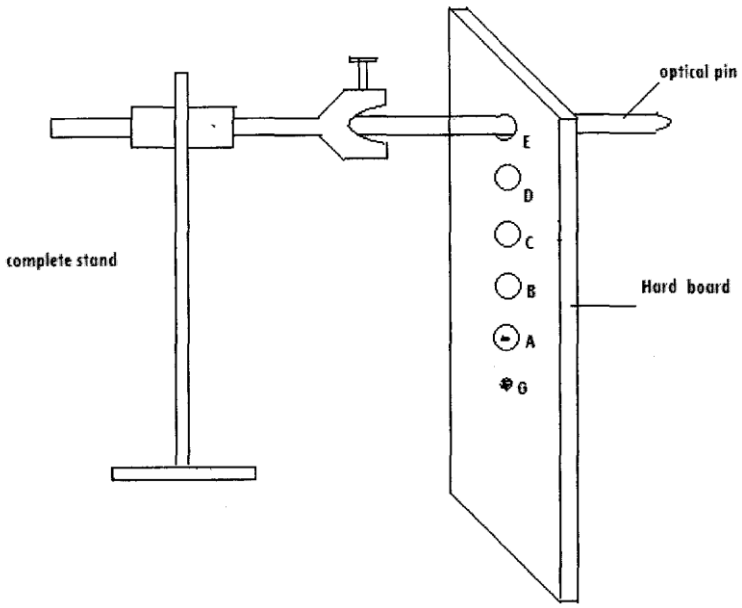
Give that $f = \frac{L^2 - d^2}{4L}$, calculate the value of f. (2 mks)

PART II

1. **You have been provided with the following apparatus**
   - — A wooden plank
   - — A stop watch
   - — Optical pin
   - — Retort stand
   - — Wooden pegs

(a) **Proceed as follows**.

i) Set the apparatus as shown in the fig below with the optical pin being at the position A which is 4 cm from the centre of gravity of the wooden plank. (Marked G)



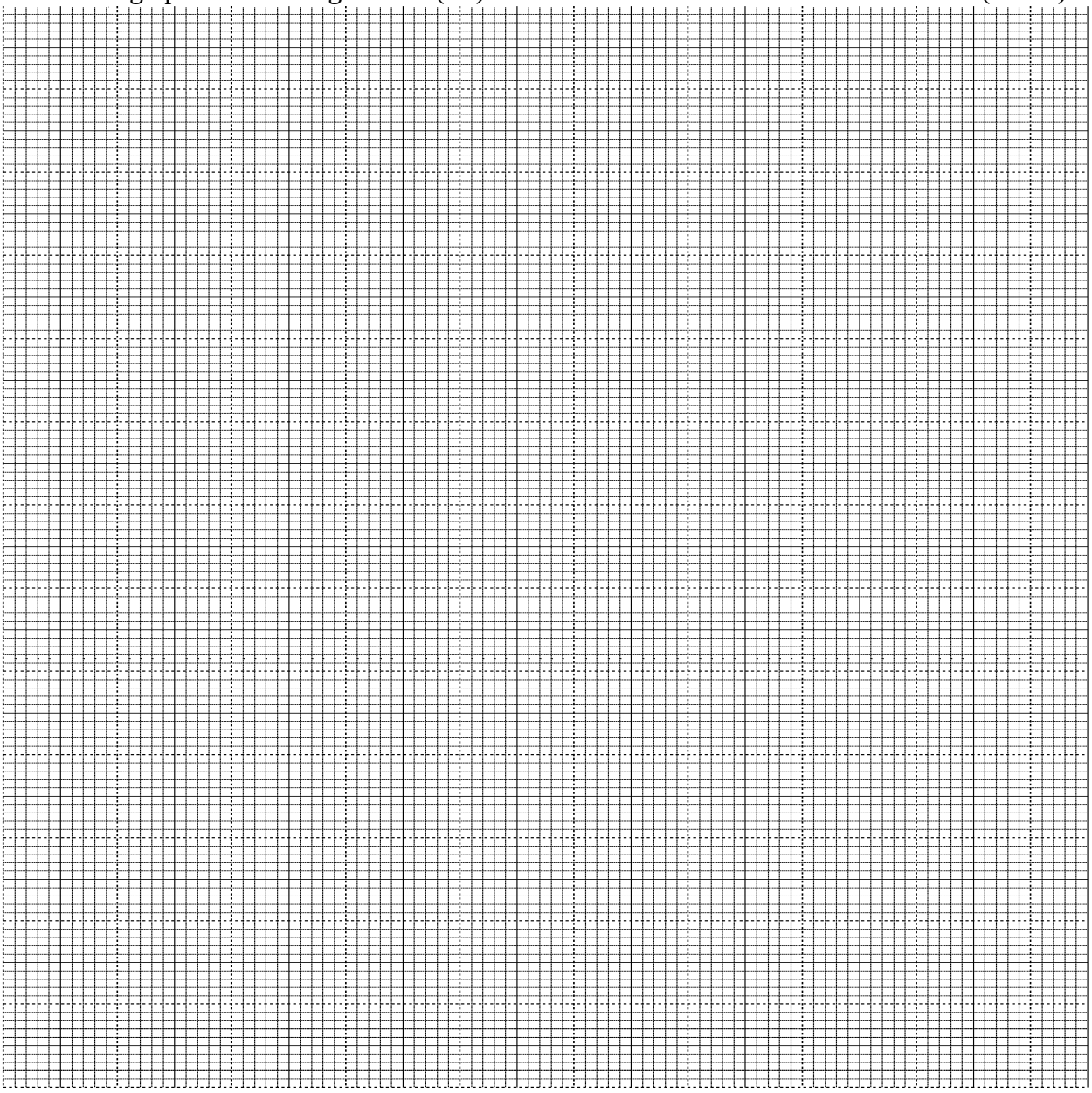
ii) Displace the strip through an angle of about 15° from its rest position and release it to swing to and fro (oscillate). Measure the time t for 10 oscillations of the wooden plank. Record your observations.

b) Repeat steps (ii) with the pin through the holes B, C, D and E of lengths L =6 cm, 8cm, 10cm and 12cm repective1y from the centre of gravity of the wooden plank marked G and tabulate your results in table. (5 mks)

(ii)

Hole	A	B	C	D	E
Distance L(m)	0.04	0.06	0.08	0.10	0.12
Time for 10 osc					
Period time T sec					
T^2 sec^2					
L^2 (m^2)					
$L^2 \times 10^{-4}$ (m^2)					

c). Plot a graph of T^2 sec^2 against L^2 (m^2) (4 mks)



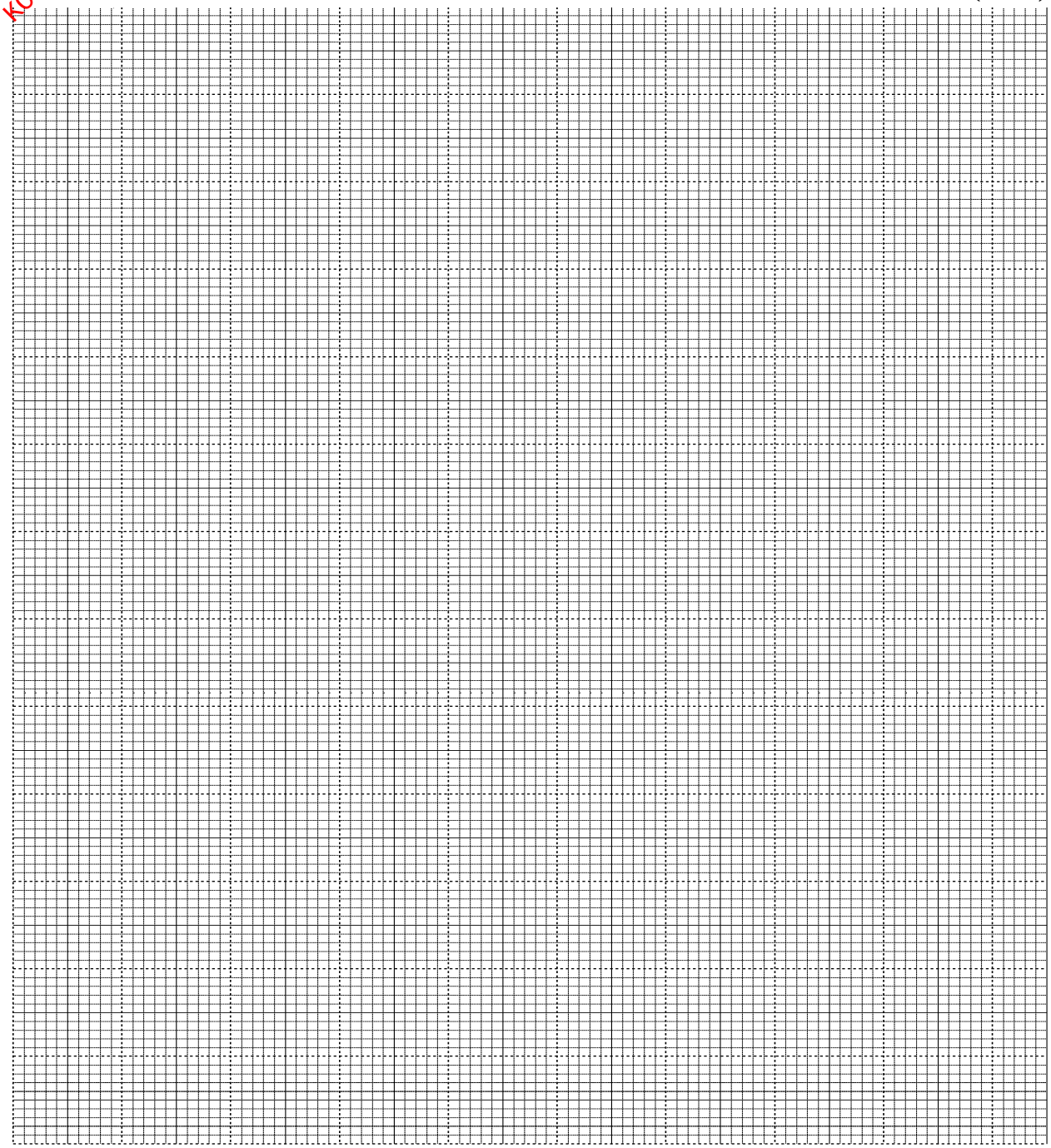
d). Determine the value of the slope S of your graph. (2 mks)

e). The equation of the line is represented by $T^2 = \frac{4\pi^2 L^2}{R} + \frac{4\pi^2 k^2}{R}$

i. Find the value of the constant R given $\pi = 3.142$. (2mks)

ii. Find the value of the intercept C of your graph and hence find the value of K.

(2mks)



2. **You have been provided with the following apparatus.**

— Resistor R

— Cell size D new

— Cell holder

— Two potentiometers marked W and X.

a) **Proceed as follows.**

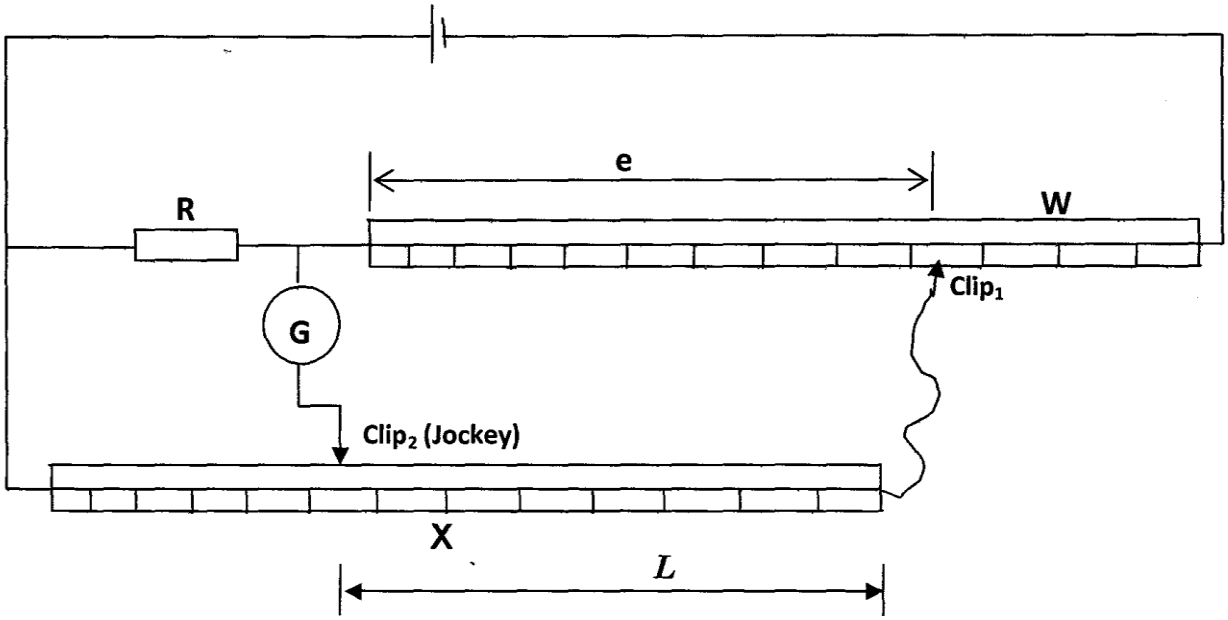
(i) Measure and record the diameter of wire W

D = m^2 (1 mark)

(ii) Use the information to calculate the cross-sectional area of the wire. (A)

A = m^2 (2 mks)

(iii) Set up the apparatus as shown in the figure below.



(iv) Move the crocodile clip along W such that the length e =10cm, then move the jockey to obtain a balance point along the wire X. Record the length L and the value of the balance point along wire X.

b) Repeat steps (iii) for values of e =20cm, 30, 40, 50, 70 and 80cm and complete the table. (6mks)

e cm	10.0	20.0	30.0	40.0	50.0	70.0	80.0
L cm							
$\frac{1}{L}\ cm^{-1}$							

c) Plot a graph of e cm against $\frac{1}{L}\ cm^{-1}$ (5mks)

d) From the graph find the slope S of your graph. (3mks)

S=

e) From the graph state the value of $\frac{1}{L}(cm^{-1})$ When e = 0 (l mk)

f) Given that $e = \frac{100R}{JL} - \frac{R}{J}$ find the value of J when R=10Ω (2mks)

END