Name: …… **Index No:** ……..

School:…… Candidate's Signature:……

Date: ……..

PRACTICAL
Physics
Paper 3
2 ½ hours
July/August – 2014

TRANS-MARA WEST ASSESSMENT TEST (TWAT)

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

PRACTICAL
Physics
Paper 3
2 ½ hours
July/August -2014

INSTRUCTIONS TO CANDIDATES:-

- *Write your **name**, **index number** and **school** in the spaces provided above.*
- *Answer **all** the questions in the spaces provided in the question paper*
- *You are supposed to spend the first **15 minutes** of **2½** hours reading the whole paper carefully before commencing your work.*
- *Marks are given for **a clear record** of the observations actually made, their **suitability**, **accuracy** and the **use** of them*
- *Record your observations as soon as you make them.*
- *Mathematical tables, slide rules and silent non-programmable electronic calculators may be used.*

For Examiners' Use Only

Question 1	(v) (i)	(vii)	(ix)	(x)	(xi)	(xii)	**Total**
Maximum Score	1	8	5	1	3	2	**20**
Candidate's Score							

Question 2	b(vi)	(c)	(d)	(e)	**Total**
Maximum Score	8	5	2	5	**20**
Candidate's Score					

This paper consists of 6 printed pages. Candidate should check to ascertain that all the papers are printed as indicated and that no questions are missing

1. (a) ***You are provided by the following:-***

- One concave mirror
- One mirror holder
- White screen
- Metre rule
- Some plasticine
- One candle

(b) Procedure:-

i. Mount the metre rule from underneath on the table using plasticine

ii. Set the apparatus as shown in the diagram below

iii. Place the mirror from one end of the metre rule as shown on the diagram

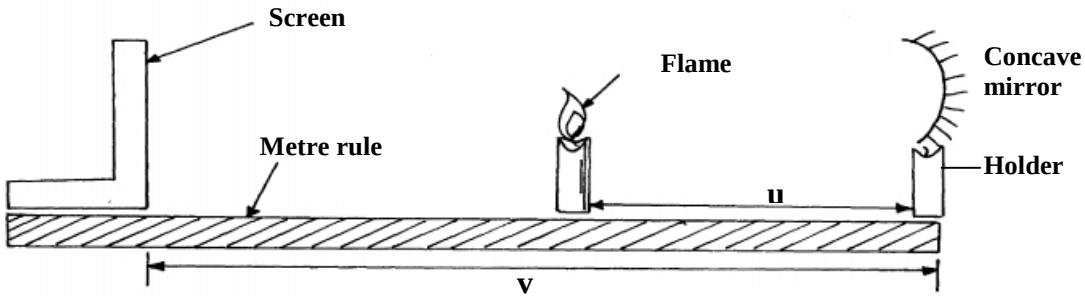
iv. Place the lit candle in front of the mirror at a distance **u**=22.0cm

v. Place the screen from the other end as shown then vary the screen to and fro until a sharp inverted image of the candle flame is obtained on it.

vi. Now measure distance **V**, between the mirror and the screen

V=.....cm. (1mk)

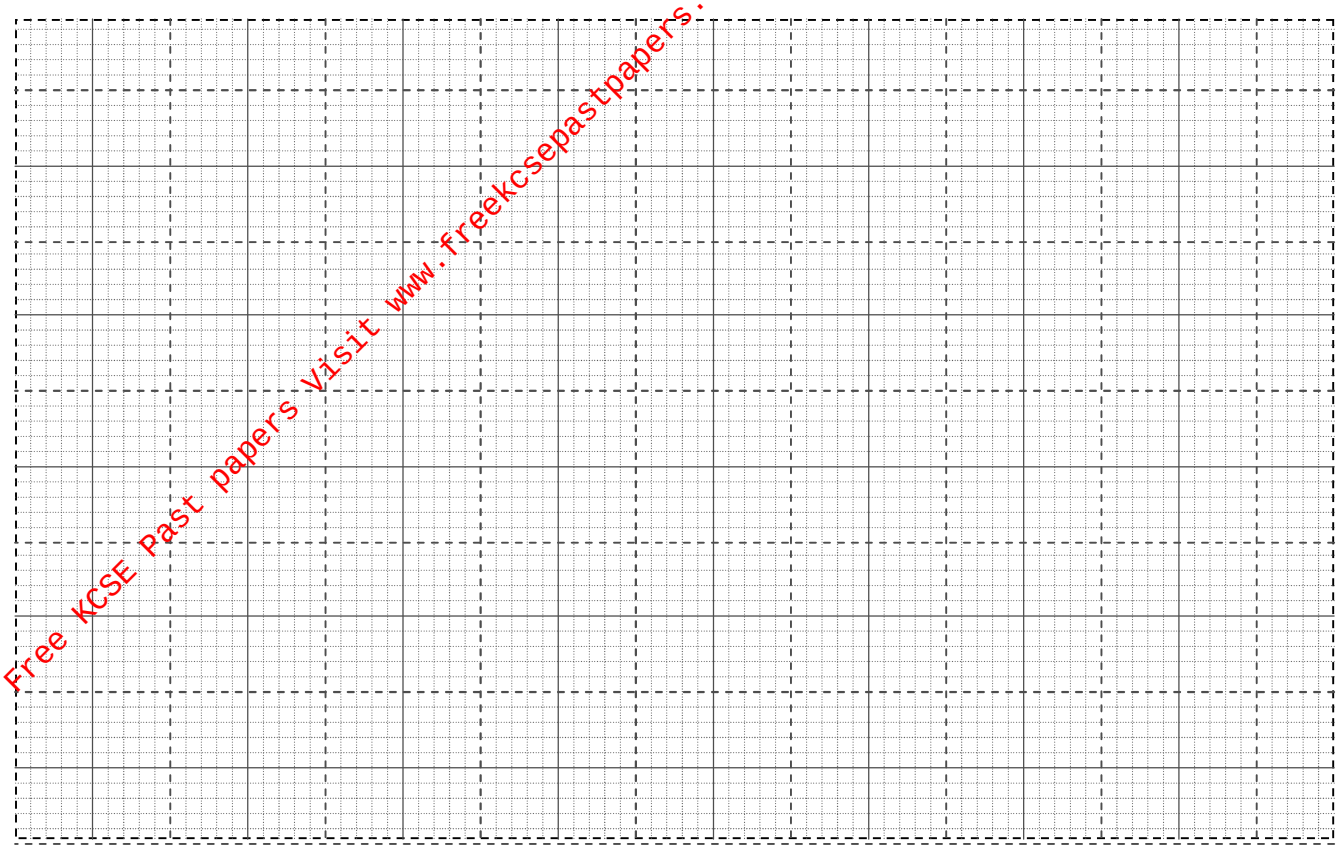
vii. Repeat the procedure in **(v)** above with distance u equal to 26cm, 30cm, 34cm, 38cm and 42cm; each time recording the corresponding distance **V** in the table below:



Vcm						
Ucm	22	26	39	34	38	42
M						

viii. Calculate the value of magnification **M** and compete the table above (8mks)

ix. Plot a graph of **M** on vertical axis against **V** (5mks)



x. From your graph, determine the value of M when **V** = 40cm

M = ... (1mk)

xi. Determine the slope of your graph (3mks)

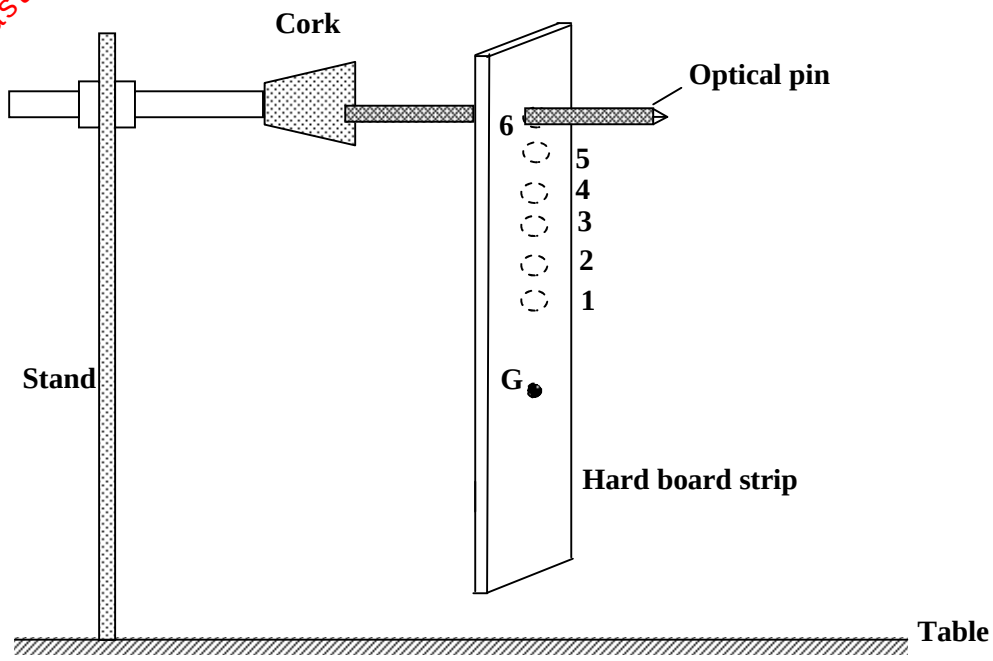
xii. Given that the equation of the above graph is: $\mathbf{M = \frac{V}{F} - 1}$

Determine the value of **F** (2mks)

2. (a) ***You are provided with the following :-***

- Retort stand
- Cork
- Pin on which the strip is suspended
- Stop watch
- Half-metre rule
- Knife-edge
- Hard board rectangular strip (40cm x 5cm x 0.5cm)
- Sharp pointed object

(b) (i) Take the hardboard and using the knife-edge, determine the position of the centre of gravity.Mark this as **G**



(ii) From **G,** cut out holes **1, 2, 3, 4, 5** and **6** at intervals of **3cm**. Measure and record the distance L of each of the holes from **G**

(iii) Set the apparatus as shown in the diagram above.

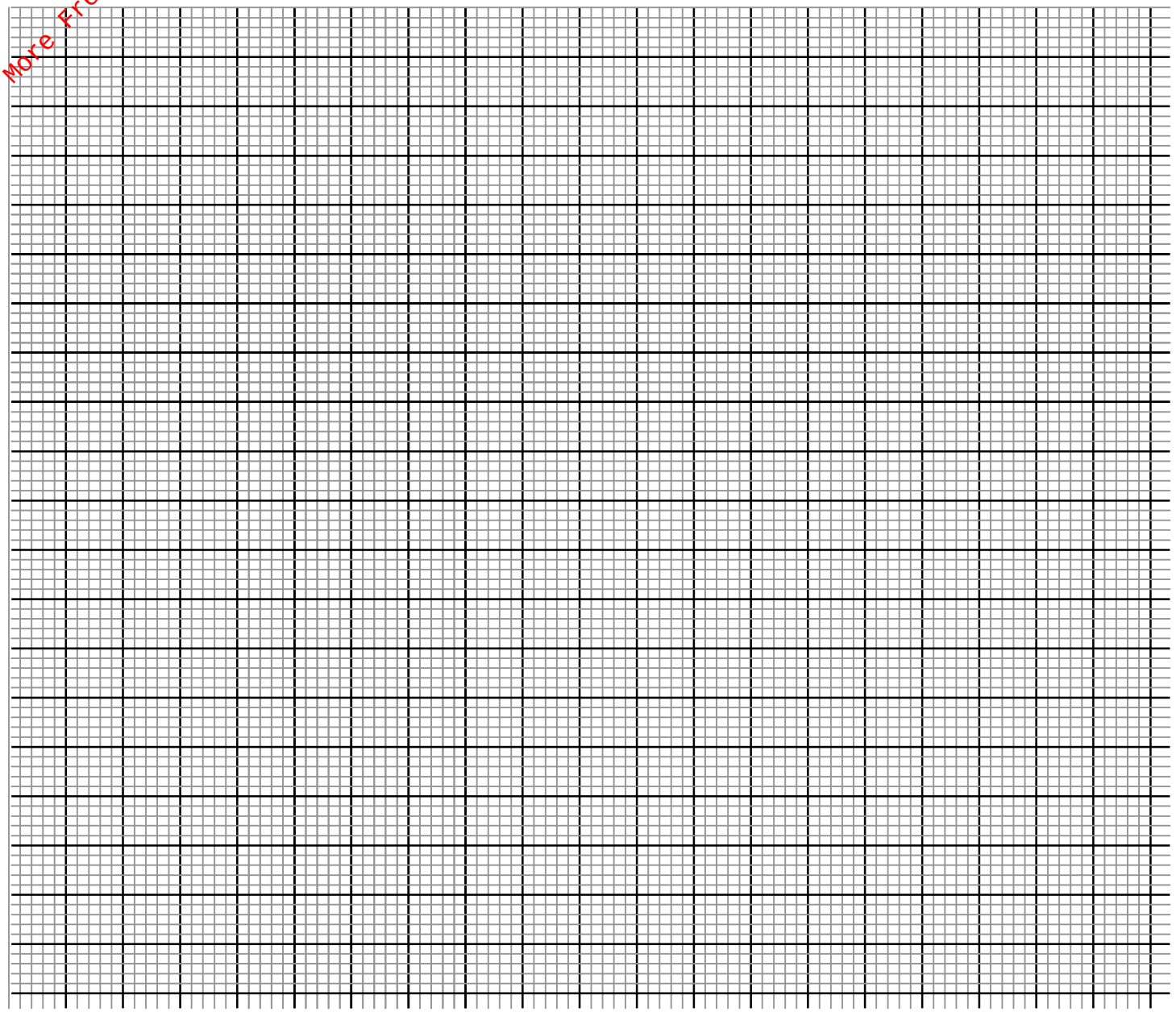
(iv) Displace the strip through a small angle θ and release it to oscillate.Determine time **t** for 10 oscillations and fill in the table of results

(v) Repeat step **(vi)** with the pin through the holes **2, 3, 4, 5** and 6 and complete the table of results

Hole	**1**	**2**	**3**	**4**	**5**	**6**
Distance L(cm)						
Time t for 10 oscillations						
Periodic time T(s)						
$T^2(sec)^2$						
T^2L $(msec^2)$						
$L^2(m)^2$						

(8 mks)

(c) Plot a graph of T^2L on y(axis) against L^2 (5mks)



(d) Determine the gradient of your graph (2mks)

(e) Given that the equation of the graph you have plotted is:

$$T^2L = \frac{4\pi^2 L^2}{g} + \frac{4\pi^2 K^2}{g}$$

From the graph determine the values of **G** and **K** (5mks)