NAME…….INDEX NO……..…DATE……
SCHOOL……..SIGNATURE……

232/3
PHYSICS
PRACTICAL
JULY/AUGUST 2010
2hr 30min

LAICOMET
Kenya Certificate of Secondary Education 2010

232/3
PHYSICS
Paper 3

INSTRUCTIONS TO CANDIDATES

- *Answer ALL the questions in the spaces provided in the question paper.*
- *You are supposed to spend the first 15 min of the time given to go through the whole paper carefully before commencing your work.*
- *Marks are given for a clear record of the observations actually made, their suitability and accuracy, and the use made of them.*
- *Record the observations as soon as they are made. Mathematic tables, slide rules and electronic calculators may be used.*

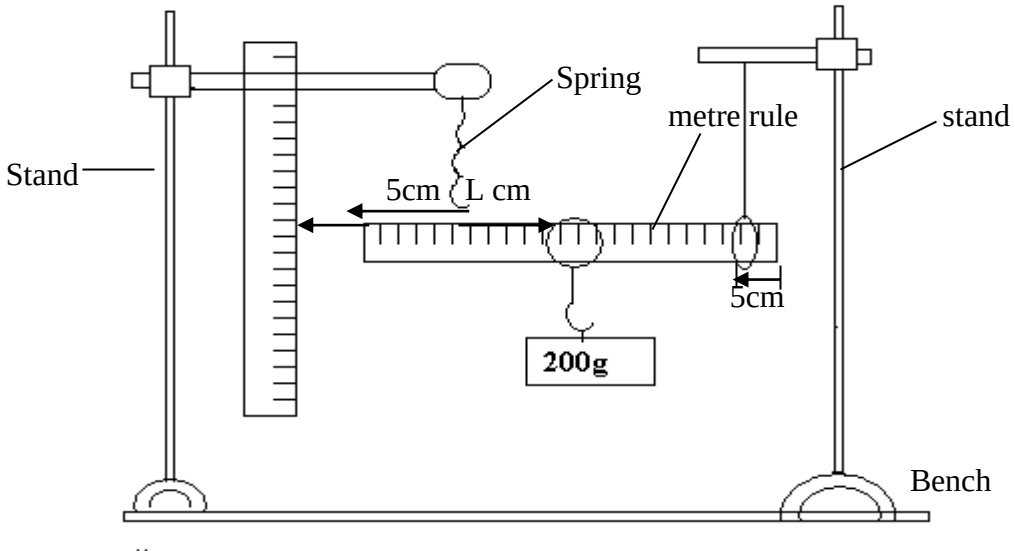
QUESTION	1*a*	1*b*	1*c*	1*d*	1*e*	2*a*(*i*)	(*iv*)	(*v*)	(*vi*)	2(*b*)*i*	*ii*	(*iii*)	(iv)	*TOTAL*
Maximum Score	1	7	5	3	4	1	1	1	2	5	5	3	2	40
Candidate's score														

Q1 You are provided with the following apparatus:

- Two metre rules
- Two stands
- Two clamps
- Two bosses
- Three pieces of thread (1 metre , 30cm and 30cm)

- One optical pin
- A piece of cellotape
- A spring
- One 200g mass
- Stop watch

Set the apparatus as shown in fig1 attach the pin (pointer on one end of the metre rule using cellotape)



- Suspend one end of the metre rule with a string at 5cm mark from the end.
- Suspend the other end with a spring also 5cm from the end so that the metre rule is horizontal. Hold the other metre rule vertically on the bench so that it is near the end with a pointer as shown in the figure above.

a) Read the pointer position Lo = cm (1mk)

Hang on the horizontal metre rule, the 200g mass at a length L=10cm from the spring. Record the extension (ℓ) of the spring in table 1 below

- Displace the mass slightly downward and release it to oscillate vertically, time for 20 oscillations.
- Record in the table the time for 20 oscillations

Repeat for other positions L of the mass.

b) **Table** 7mks

Length	10	20	30	40	50
L(cm) Extension e (cm)					
Time for 20 oscillations					
Period time T(sec)					

$T^2(\sec^2)$					

c) Plot the graph of extension 'ℓ'(y- axis) against T^2 on the grid paper provided (3mks)

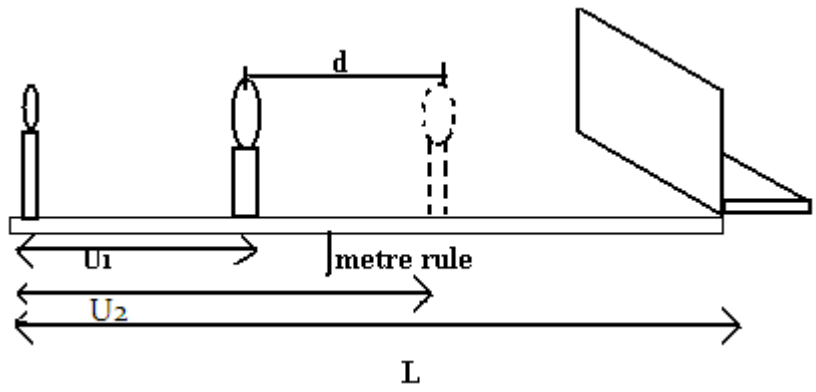
GRAPH

d) Calculate gradient of the graph (3mks)

e) Given that $\ell = \frac{PT^2}{4\pi^2} + C$

Determine the value of P (4mks)

2. You are provided with a metre rule , a lens holder,a concave lens, a candle, and 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 to the candle U_1=.....cm (1mk)

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

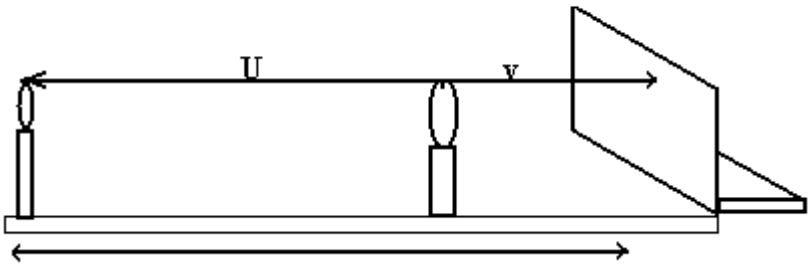
U_2 = ...cm (1mk)

v) Calculate the displacement of the lens (1mk)

d= $U_2 - U_1$ =.....cm

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

b) With the same set up ensuring that L= 100cm adjust the lens until you get a sharp diminished image on the screen. Measure the object distance **U** and image distance V



i) Repeat the procedure withy L= 95cm, 90cm, 85cm, 80cm and 75cm each time recording the value of U and V and tabulating the results in the table II below.

(5mks)

L (cm)	100	95	90	85	80	75

U (cm)						
V (cm)						
$m = \frac{V}{U}$						

ii) Pot the graph of M against V (5mks)

GRAPH

iii) Determine the slope of the graph (3mks)

iv) Given that $\frac{v}{f} = m + 1$ determine the focal length of the lens from the graph above

(2mks)