NAME: ……. **INDEX NO: ..…...……**

SCHOOL: …… **Candidate's signature: ……..**

Date: ……

232 / 3
PHYSICS
PAPER 3
JULY / AUGUST
(PRACTICAL)
2 ½ HOURS

MUTOMO / IKUTHA DISTRICTS PACESETTER- 2011

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

232 / 3
PHYSICS
PAPER 3
(PRACTICAL)
2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name and index number 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 the 2 ½ hours allowed for this paper reading the whole paper carefully before commencing your work.
- Marks are given for a clear record of the observations actually made, for their suitability and accuracy and the use made of them.
- Candidates are advised to record their observations as soon as they are made.
- Mathematical table and electronic calculators **may be** used.

FOR EXAMINER'S USE ONLY

Question	Maximum Score	Candidates Score
1	20	
2	20	
Total	**40**	

This paper consists of 6 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing.

 Turn Over

1. You are provided with the following apparatus.
   - Two metre rules (one metre rule and half metre rule)
   - Two stands and clamps
   - Two bosses
   - Three pieces of threads (at least 1m, 30cm, 30cm)
   - A spring
   - A piece of cellotape or a plasticine
   - One mass 100g
   - A stop watch
   - Optical pin

   Proceed as follows

   i) Set the apparatus as shown in the figure below. Attach the optical pin (to act as the pointer) at one end of the metre rule using a cellotape.

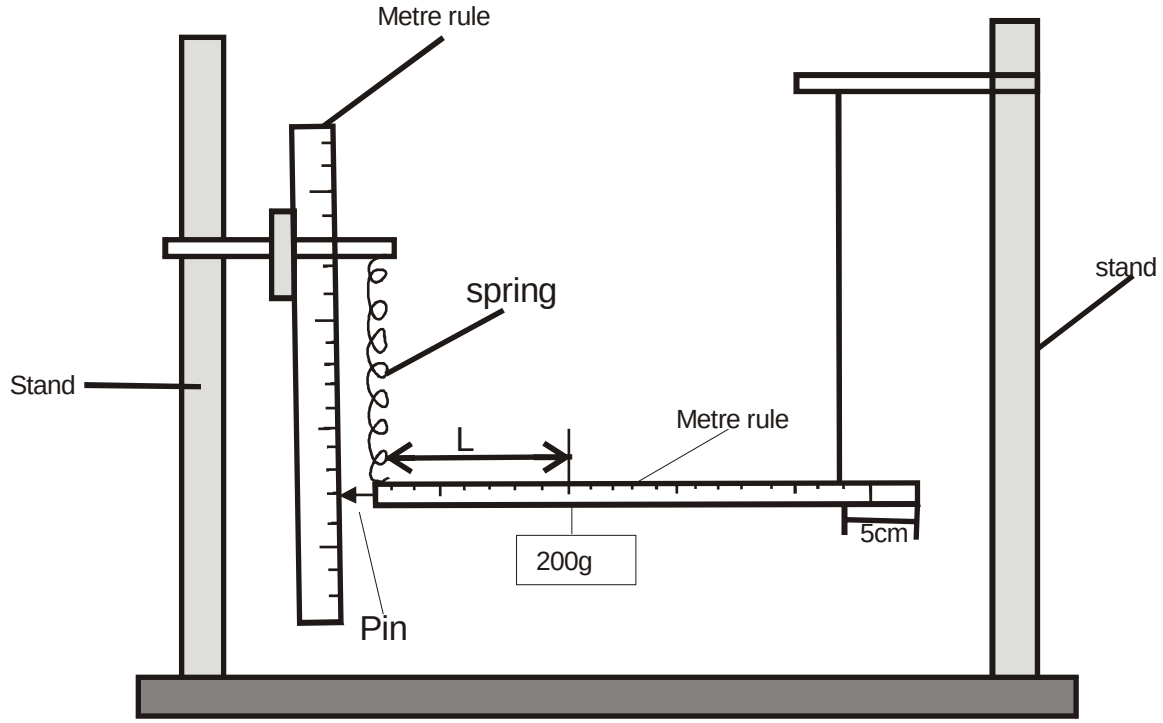


   Figure 1

   ii) Suspend one end of the metre rule with a thread at 5cm mark from the other end.

   iii) Suspend the other end with a spring also 5cm from the end so that the metre rule is horizontal.

   iv) Hold the other ruler vertically on the bench so that it is near the end with a pointer as shown in the diagram above.

   v) Read the pointer position, L_0= ……cm (1 Mark)

vi) Hang on the horizontal metre rule, the 100g mass at a length, L=10cm from the spring. Record the extension, e, of the spring in the table below.

vii) Displace the mass slightly downwards and release it to oscillate vertically. Take time for 20 oscillations and record in the table below.

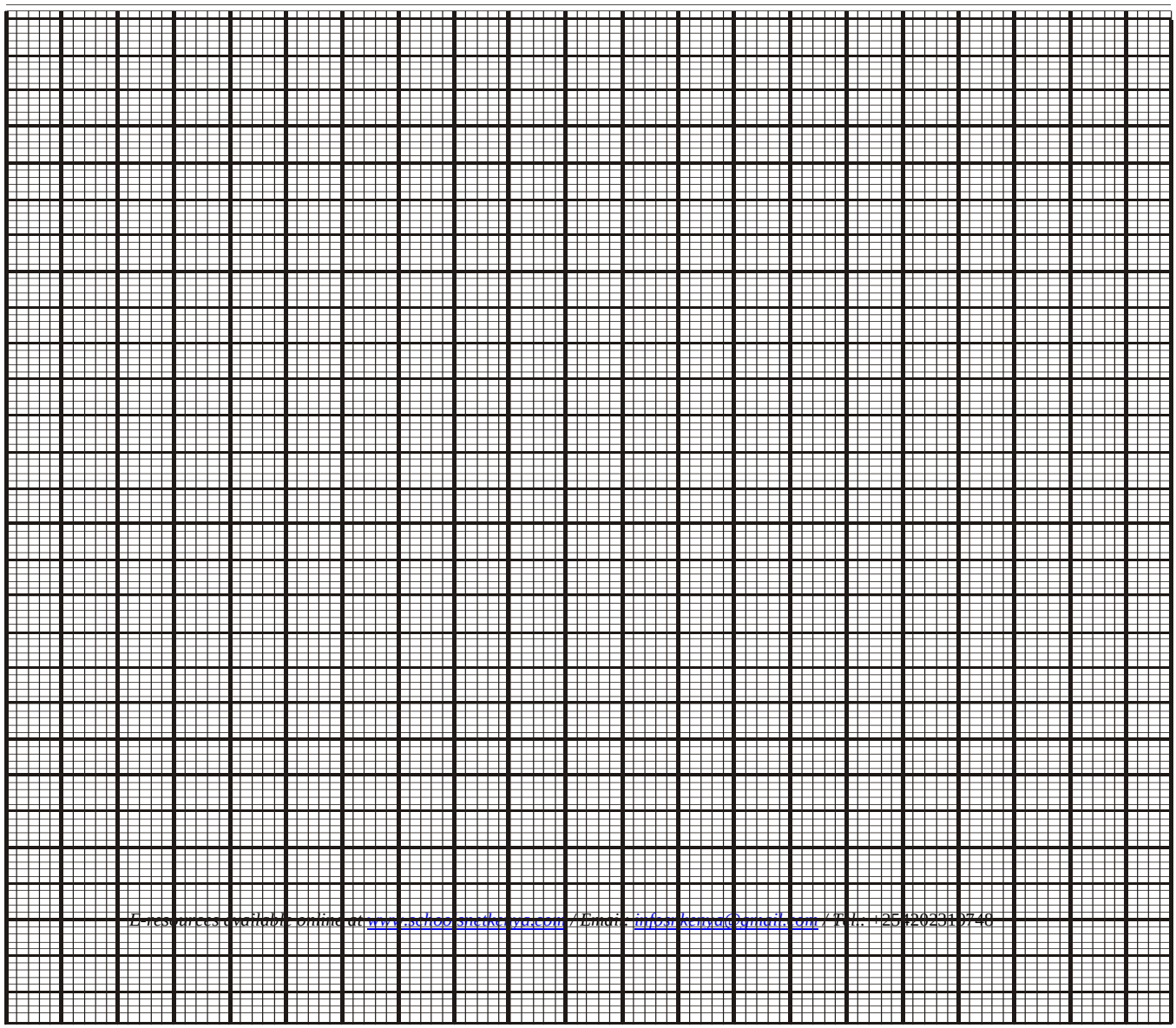
viii) Repeat for other position of L, of the mass.

NB: Before taking the reading, ensure the oscillation is steady.

Complete the table below. (8Marks)

Length, (cm)		10	20	30	40	50
Extension	(cm)					
	(m)					
Time t(s), for 20 oscillations						
Period time T(s)						
$T^2(s^2)$						

ix) Plot a graph of extension e(m) against $T^2(s^2)$ (5 Marks)



x) Calculate the slope of the graph. (3 Marks)

xi) Given that $e = \frac{RT^2}{4\pi^2} + C$, determine the value of R. (3 Marks)

2. You ate provided with the following apparatus.
   - Cell holder
   - Micrometer screw gauge (to be shared)
   - 2 dry cells
   - A voltmeter (range Ov – 5v)
   - A torch bulb 3.0V
   - An ammeter
   - Mounted wire on a meter rule (Swg 30); 100cm
   - 7 connecting wires (One with a clip)

   Proceed as follows.

a) i) Set the circuit as shown in the figure 4 below.

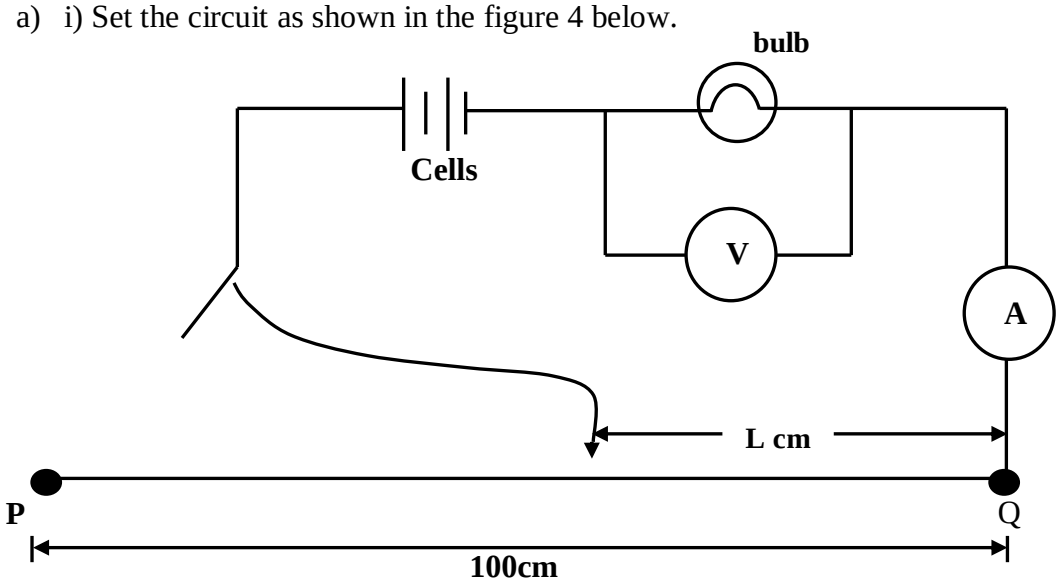


Fig 4

ii) With the crocodile clip at P (L = 100cm), take the voltmeter reading and ammeter reading (switch closed). (1 Mark)

iii) Repeat the readings for L = 80cm, 60cm, 40cm, 20cm and 0cm. Record your readings in the table below.

Length L(cm)	100	80	60	40	20	0
Voltmeter reading (V)						
Ammeter reading (I)						

iv) What changes do you observe on the bulb as L decreases from P? (1 Mark)

……

……

v) On the grid provided below, plot a graph of voltmeter reading (Y-axis) against the ammeter reading.

vi) What physical quantity is represented by the slope of the graph at any given point? (1Mark)

vii) Use your graph to describe how the physical quantity in (vi) is affected as the current increases. Explain why? (2Marks)

b) i) Given the apparatus in a(i) above, draw a diagram of a circuit you would use to determine the current through the resistance wire and potential difference across it. (2Marks)

ii) Set up the circuit you have drawn and record the voltmeter reading, V and the ammeter reading, I when L = 100cm.

V = (1 Mark)

I = (1 Mark)

iii) Measure the diameter, d, of the wire and note the total length L, of the wire.

L = (½ Mark)

D = (½ Mark)

iv) Calculate the quantity P Given that $P = \frac{0.785Vd^2}{IL}$ and give its SI unit. (2 Marks)