

Name Index No.....
 School Candidates Sign:
 Date:

232/3

PHYSICS PAPER 3

(Practical)

Time: 2 ¼ Hours

CROSS COUNTRY JOINT REGISTRATION EXAM – 2013

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

INSTRUCTIONS TO THE CANDIADATES

- Answer all the questions
- You are supposed to spend the first 15 minutes reading the whole paper carefully before commencing your work.
- Marks are given for clear record of the observations accurately made, their suitability and accuracy and the use made of them.
- Mathematical tables and electronic calculators may be used

FOR EXAMINERS USE ONLY

Question 1	c	f	g(i)	g(ii)	g(iii)	h
Max Score	2	7	5	2	2	2
Candidate's Score						

TOTAL

	Part 1				Part 2	
Question 2	b	d	e	f	b	c
Max Score	1	8	5	2	3	1
Candidate's Score						

TOTAL

GRAND TOTAL

This paper consists of 4 printed pages. Candidates should check the question paper to ensure that all the

Pages are printed as indicated and no questions are missing.

Question 1.

You are provided with the following apparatus:

- A candle
- A lens holder
- A convex lens
- A screen
- A metre rule
- An object

Proceed as follows:

Using an object infinity outside the room, focus its image on the screen provided. The image should be as sharp as possible and inverted. Measure the distance from the lens to the screen hcm. Repeat the same for three other values of h. Record your results and then calculate the average value of the three results, Hcm.

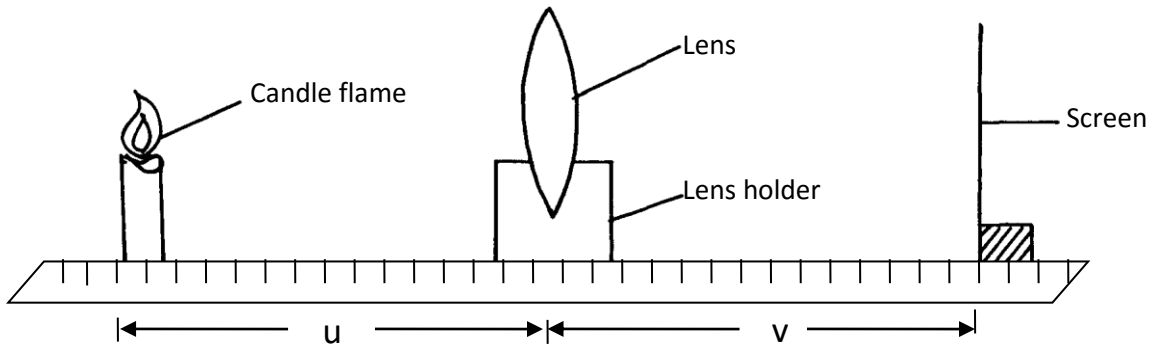
First reading of h..... (1mk)

Second reading of h (1mk)

Third reading of h (1mk)

The average value of h(H) (1mk)

Arrange the candle flame, the lens, and the screen as shown in the diagram below:



b) i) For particular value of u , adjust the position of the screen until a sharp image appears on the screen. Measure distance V cm. Repeat the experiment for each of the other values of u , and

enter the results in the table below:

(7mks)

Distance L (cm)	Distance V (cm)	uv (cm ²)	$U + v$ (cm)
12			
15			
18			
21			
24			
27			
30			

(ii) Plot a graph of uv against $u + v$

(5mks)

(iii) From your graph, calculate the slope S

(2mks)

(iv) Calculate the value of k given that $kH = S$

(2mks)

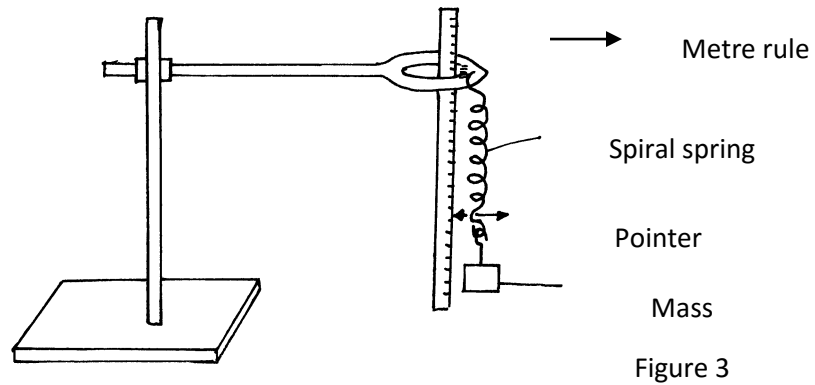
2. PART I

You are provided with the following:

- A spiral spring
- One stand, one boss and one clamp
- A metre rule
- A stop watch
- A set of masses

Proceed as follows:

a) Arrange the set-up as shown below



b) Note the reading of the pointer of the spring when no mass is suspended from its hook.

$L_0 =$ _____ cm (1 mk)

c) Attach a 50g mass on the spiral spring and measure the length L of the spring with the mass 50g on the spring, slightly displace the spring downwards and note the time for 20 oscillations. Record your results in table 2 below

d) Repeat procedure in c) above for 100g, 120g, 150g, 200g and 250g. Complete the table.

Table 2

Mass M (g)	50	100	120	150	200	250
L (cm)						
$e = L - L_0$ (cm)						
time, t for 20 oscillations (s)						
Log t						
Log e						

(8 mks)

e) Plot the graph of $\log t$ against $\log e$.

(5 mks)

f) Given that

$$\text{Log t intercept} = \frac{1}{2} \log \left(\frac{16\pi^2}{A} \right)$$

Determine the value of A

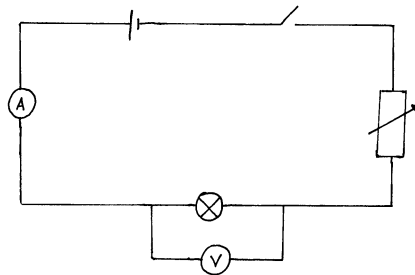
(2 mks)

PART II

You are provided with the following apparatus

- One new dry cell
- One cell holder
- Switch, K
- An ammeter
- A voltmeter
- A variable resistor, rheostat or potentiometer
- Seven connecting wires, at least 4 of which with crocodile clips
- A bulb holder
- A torch bulb 2.5V (for 2 dry cells)

a) Set up the apparatus as shown below



b) Set the ammeter reading to 0.04A, 0.06A and 0.08A using the rheostat. Get the corresponding readings and fill the table below.

(3 mks)

Current (A)	Voltage (V)	Resistance (Ω)
0.04		
0.06		
0.08		

c) From the table, calculate the average resistance of the bulb filament.

(1 mk)