NAME ..... DATE .....

INDEX NO. ..... CANDIDATE'S SIGNATURE .....

232/3

PRE-MOCK

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

PHYSICS
PAPER 3
PRACTICAL
TIME: 2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name and **index number** in the spaces provided
- 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 clear record of observations actually made, their suitability, accuracy and the use made of them.
- Candidates are advised to record their observations as soon as they are made.
- **Non- programmable** silent electronic calculators and KNEC mathematical table may be used.

FOR EXAMINERS USE ONLY

Question 1	b (ii)	c (i)	c (ii)	c (iii)	c (iv)	d (i)	d (ii)
Maximum score	5	5	2	1	1	2	2
Candidate's score							

Question 2	a	b	c (i)	c (ii)	c (iii)	f (i)	f (ii)		
Maximum score	1	8	5	2	2	2	2		
Candidate's score								**Grand total**	

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

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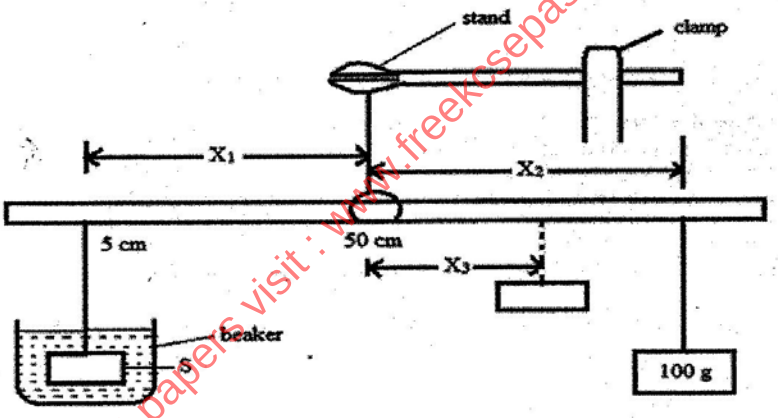
1. ***You are provided with:***

- Mass S
- One 100g mass
- Metre rule
- Cotton thread (3 –pieces each about 30cm long)
- Retort stand and clamp
- 250cm^3 glass beaker
- 200cm^3 of water

(a) (i) Make loops of thread on mass S and the 100 g mass

(ii) Suspend the metre rule on the clamp from the 50cm mark

(iii) Hang mass S from the mark. Balance the metre rule using the 100g mass (***see fig. 1 below***)



(iv) Measure the distance X_1 and X_2 from the 50cm mark

(v) Repeat the procedures for the values of X_1 indicated in the table below:

X_1 (cm)	X_2(cm)	X_3(cm)	$X_2 - X_3$ (cm)
45			
40			
35			
30			
25			
20			

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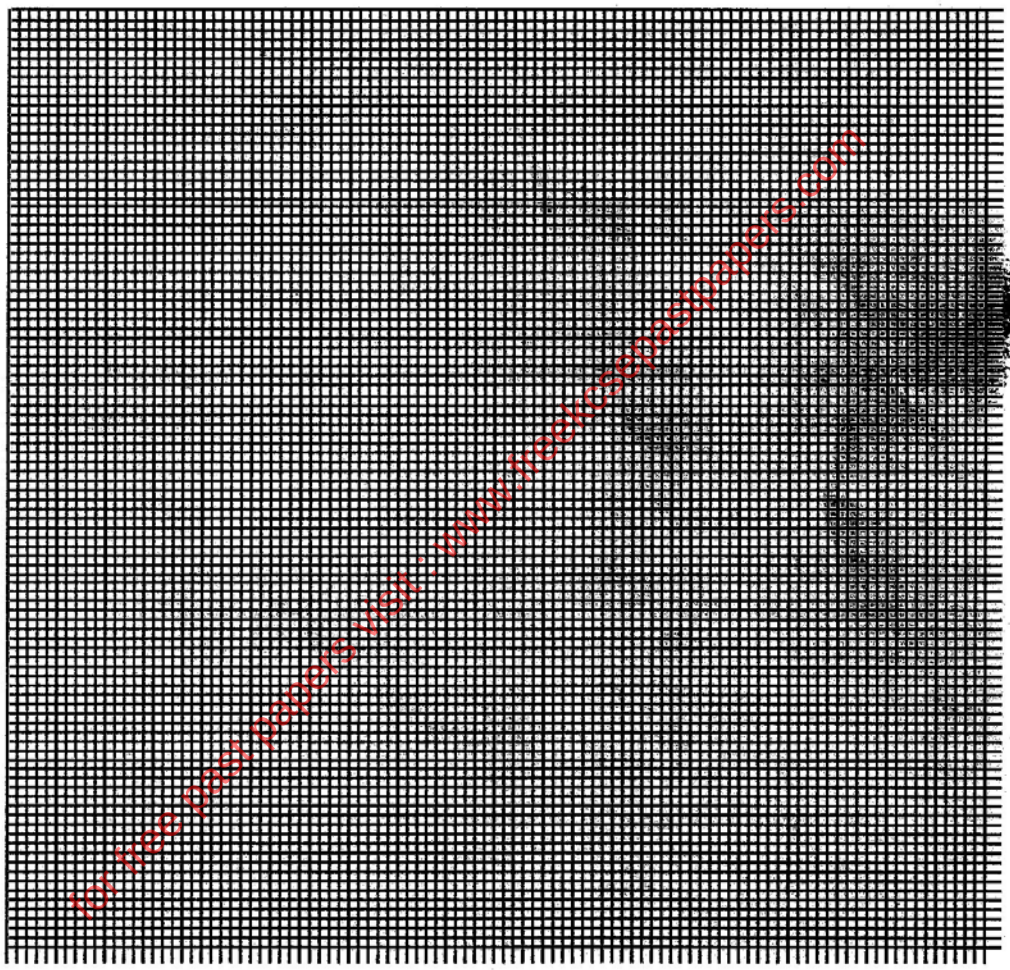
(b) (i) Repeat steps **(a) (iii)** to **(a) (iv)** above, but this time, keep mass **S** totally immersed in water. Record distance X_3 required to balance the 100g mass in the table above.

(ii) Complete the table for the values of $(X_2 - X_3)$ (5mks)

(c) (i) Plot a graph of X_2 (Vertical axis) against (X_2-X_3) on the grid provided (5mks)



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ii) Determine the slope of your graph (2mks)

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iii) What physical property does the slope, represent? (1mk)

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iv) Given that the density of water is 1000kg/m^3, determine the density of mass, **S** (1mk)

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(d) (i) Using the apparatus you were given, determine the mass of your metre rule (2mks)

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(ii) Draw a diagram of the set-up of the apparatus you have used to work out **(d) (i)** above (2mks)

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2. Part A

You are provided with the following: -

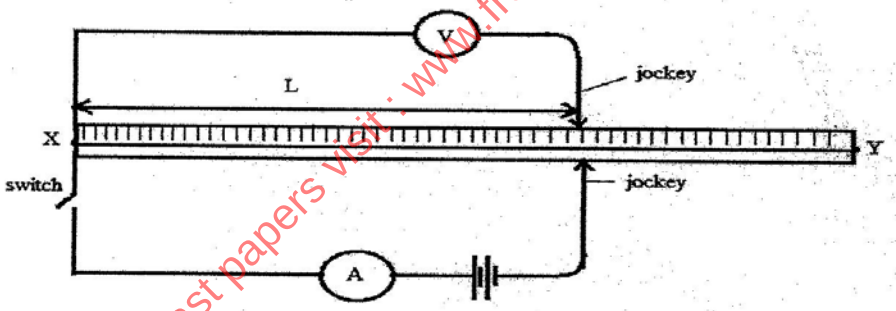
- Ammeter
- A voltmeter
- A straight wire XY mounted on a millimeter scale
- Two jockeys
- 7 connecting wires
- A micrometer screw gauge (to be shared)
- A cell holder for two dry cells
- Two dry cells
- A switch
-

Proceed as follows:

(a) Using the micrometer screw gauge, determine the diameter'd' of the wire XY

d = _____mm (1mk)

Set-up the apparatus as shown below:-



b) With both jockeys set at L = 10cm from X, measure current I through the wire and voltage V across it. Repeat this procedure for the other values of L and record in the table below: (8mks)

Length (cm)	10	30	40	50	70	80	100
Length (m)							
Current I(A)							
Voltage V(V)							
$R = {}^{V}/_{I}(\Omega)$							

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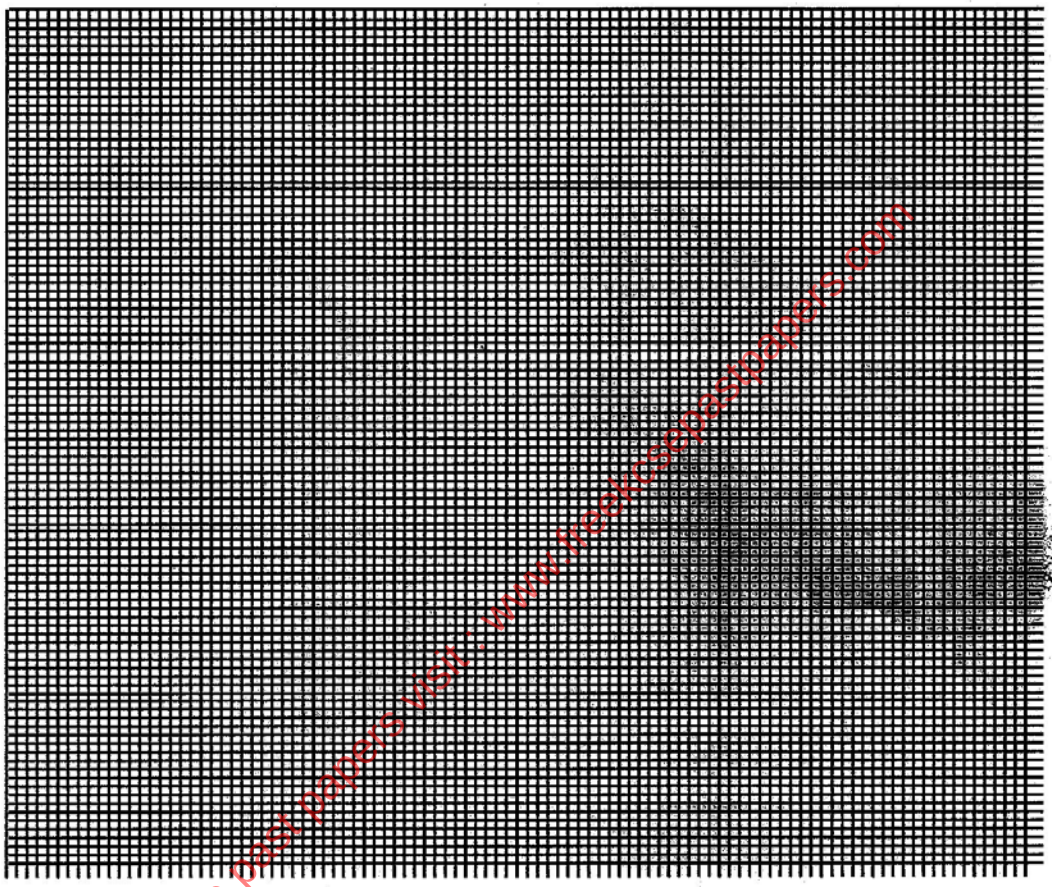
c) (i) Using the values in the table above, plot a graph of I(A) against R(Ω) on the grid provided (5mks)



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(ii) Determine the gradient of the graph at **R = 10Ω** (2mks)

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(iii) Given that $-I = \frac{\pi d^2 R}{4KL}$ where **L = 60 cm**, find the value of **K** (2mks)

ii) T

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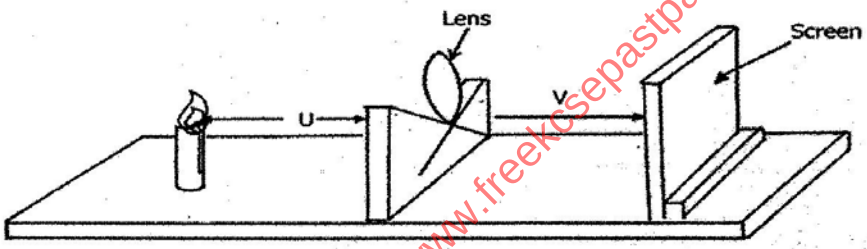
Part B

You are provided with the following apparatus

- A lens
- A lens holder
- A candle
- A white screen
- A metre rule

Procedure

d) Set up the apparatus a shown in the figure 3 below:



e) Starting with u = 30cm adjust the position of the screen to obtain a sharp image of the candle. record value of V in the table shown below:

f) (i) Repeat the procedure above for u = 20cm and complete table below:

Table 3

u cm	v cm	$M = v/u$
20		
30		

(2mk)

(ii) Given that the focal length of the lens satisfies the equation, $f = \frac{v}{1+m}$ determine the average value of the focal length (2mks)

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