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

o   Write your name and index number in the spaces provided

o   Answer **ALL** the questions in the spaces provided in the question paper.

o   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.

o   Marks are given for clear record of observations actually made, their suitability, accuracy and the use made of them.

o   Candidates are advised to record their observations as soon as they are made.

o   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* ...

- Mass S
- One 100g mass
- Metre rule
- Cotton thread (3 –pieces each about 30cm long)
- Retort stand and clamp
- 250cm³ glass beaker
- 200cm³ 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*)
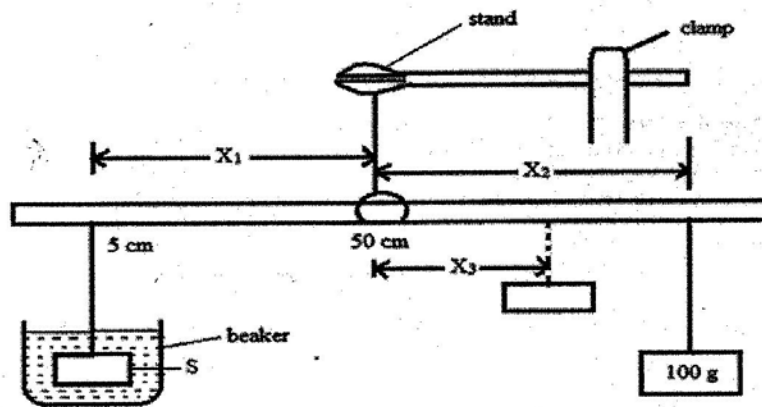
(iv) Measure the distance X_1 and X_2 from the 50cm mark

(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			

2

(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)

3

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 $1000 kg/m^3$, 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)
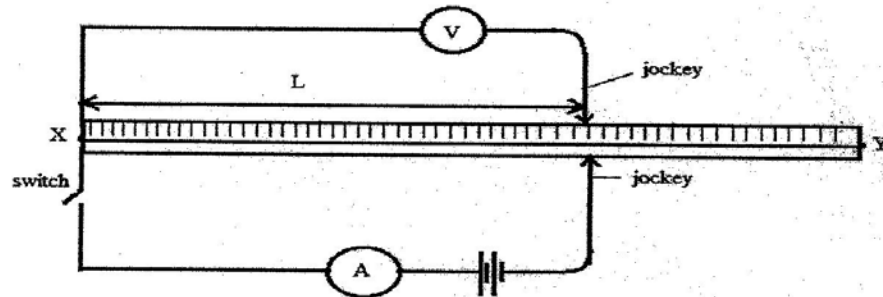- A cell holder for two dry cells
- Two dry cells
- A switch
-

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 (Ω)							

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

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

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

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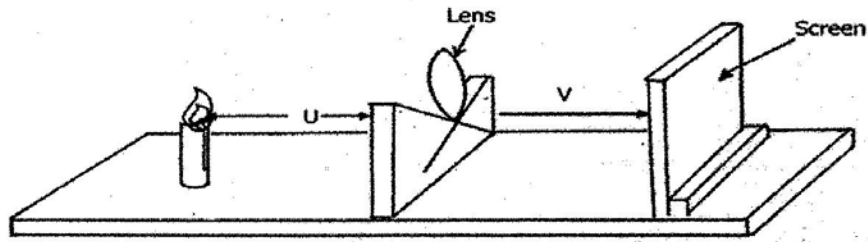
Part B

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	$M = \dfrac{v}{u}$
20		
30		

(2mk)

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

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