Name…… …….…… Index No:…….

232/3
PHYSICS
PRACTICAL
PAPER 3
MARCH/APRIL 2014
TIME: 2½ HOURS

Candidate's Signature ……..……
Date: ……

MIGORI SUB-COUNTY JOINT EVALUATION EXAM

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

232/3
Physics
Paper 3
2 ½ hours

INSTRUCTIONS TO CANDIDATES:

1. *Write your **name** and **index number** in the spaces provided above.*
2. *Sign and write the **date** of the examination in the spaces provided above.*
3. *You are supposed to spend the first 15 minutes of the 2 ½ hours allowed for this paper reading the whole paper carefully.*
4. *Marks are given for a clear record of the observation actually made, their suitability, accuracy and the use made of them.*
5.

For Examiners' Use Only

Question 1	**a**	**b**	**d**	**e**	**f**	**g**
Marks Score	2	7	5	2	2	2
Candidate's score						

TOTAL

		Part A				**Part B**		
Question 2	**m**	**n**	**o(i)**	**o(ii)**	**a**	**b(i)**	**b(ii)**	**b(iii)**
Marks Score	1	8		5		2	3	1
Candidate's score								

TOTAL

GRAND TOTAL

This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

1. Question 1

You are provided with the following apparatus

- A mounted wire labeled N with ends marked XY
- Avolmeter (0-3 or 0- 5.v)
- An ammeter
- A switch
- Two dry cells and a cell holder.
- Six connecting wire with atleast two crocodile clips .

Procedure.

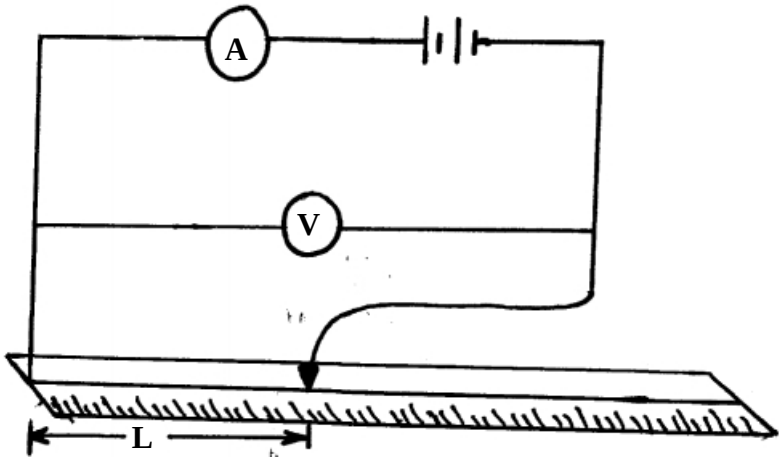
(a) Using the micrometer screw gauge, determine the diameter d of the wire at some three different points

d_1=……mm d_2=…….mm

d_3……mm d = ……..m (2mks)

(b) Calculate the cross- sectional area A of the wire in M^2 (2mks)

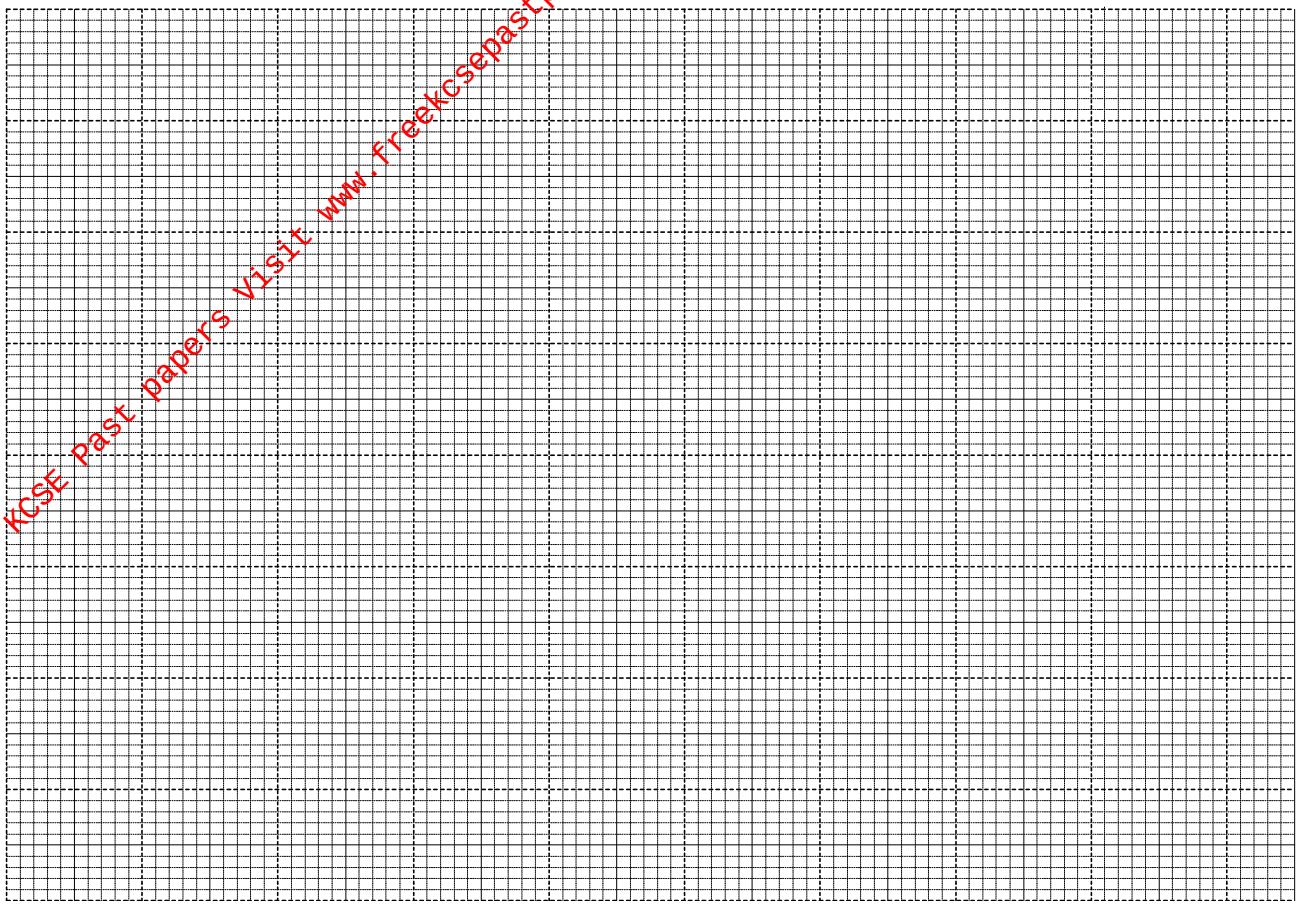
(c) Set up the circuit as shown below.



(d) Vary the length by using the crocodile clip along the wire from (when L =0). Record the voltmeter and ammeter readings in the table below.

Length L (cm)	30cm	60cm	40cm	20cm	0cm
Current I (A)					
Voltage (V)					

(e) Plot the graph of voltage V against current I (5mks)



(f) Calculate the internal resistance of a cell. (4mks)

(g) From the graph, determine the e.m.f of the battery. (2mks)

Question2

Part A

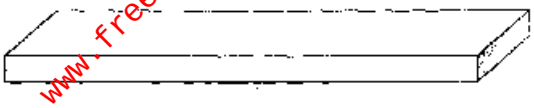
Apparatus

- A glass block
- Soft board
- Plain paper
- Four optical pins
- Four thumb pins
- A protractor
- A wire

Method

a) Fix the plain paper on the soft board using the four thumb pins.

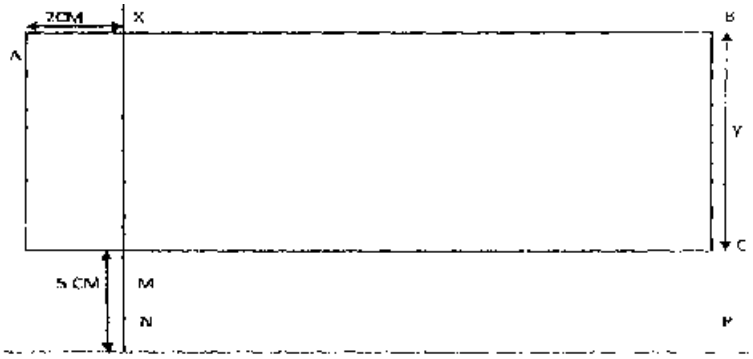
b) Place the glass block on the paper (that is fixed on the soft board). Let the glass block rest on the paper from the br5oader face as shown in the figure below.



c) Trace the glass block using a pencil.

d) Remove the glass block

e) Mark point x on one of the longer side of the traced glass block as shown. Point x should be 2cm from edge.



Construct a normal at X to emerge through line DC. Let this normal meet line DC at point M.

f) Mark point N along the emergent normal at 5cm from M

g) Construct line NP to meet the normal at N at 90^o Line NP should be 10cm.

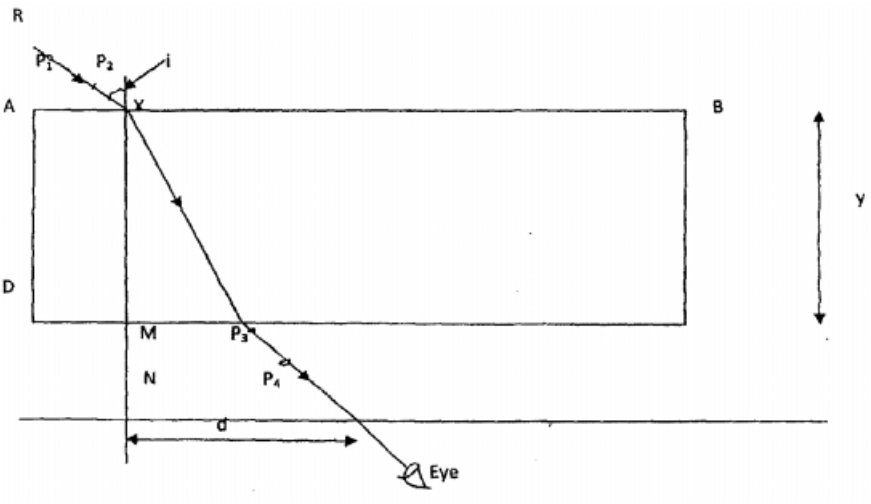
h) Using a protractor, construct an incident ray **RX** at an angle of incident i =10°. Fix two pins P_1 and P_2 along RX.

i) Replace the glass block to the traced figure.

j) View the path of the incident ray RX through this glass block using the other two pins P_3 and P_4. This can be done by ensuring that the image of pin P_1 and P_2(as seen from the glass block) are in line with pin P_3 and P_4.

k) Remove the glass block and draw the emergent ray through P_3 and P_4.

1) Measure the distance of the emergent ray from point N along line NP as shown below.



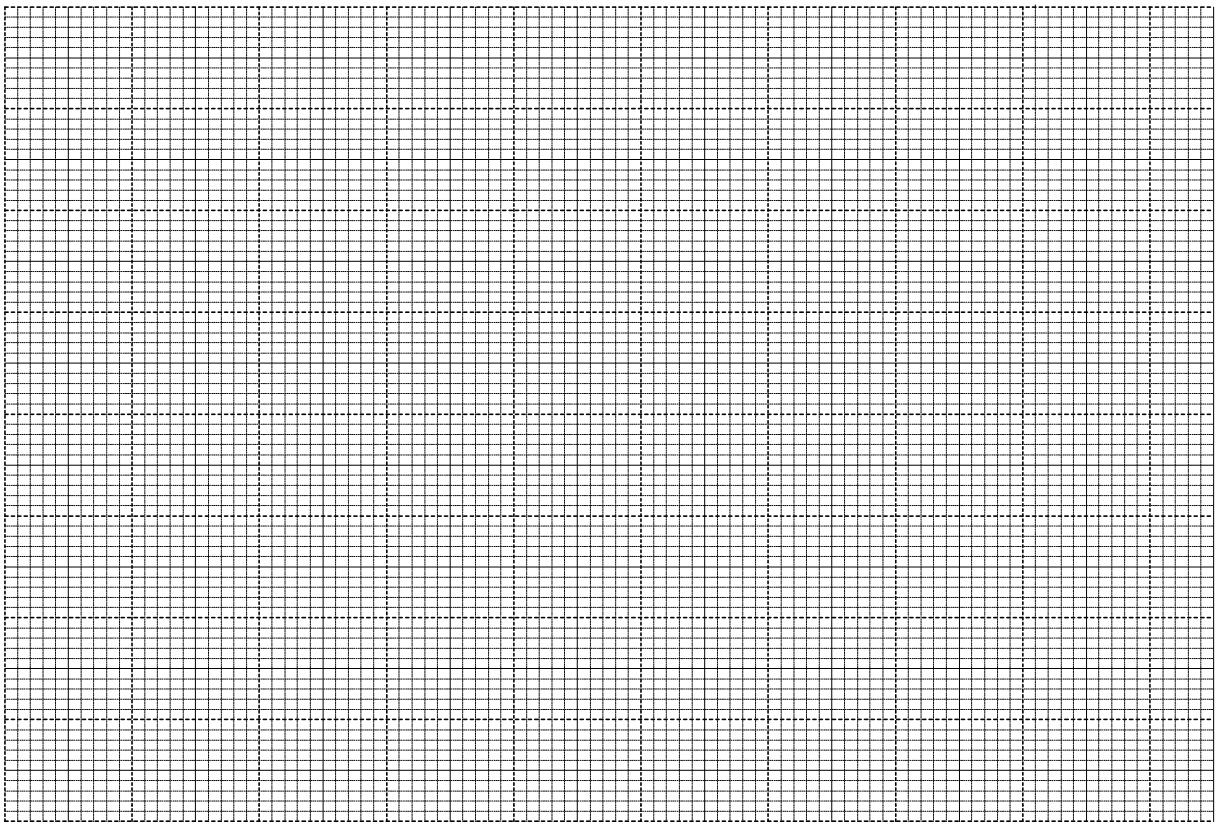
Record the corresponding values of d in the table below.

m) Repeat the procedure for other values of i°.

Angle of incidence	**10**	**20**	**30**	**40**	**50**	**60**
Distance d (cm)						
Sin i°						
Sin2i°						

(5mks)

n) Plot the graph of sin2i (vertical axis) against d. (5mks)



o) (i) Calculate the gradient of the graph. (3mks)

(ii) Find **d** when the angle of incidence is 45^o (1mk)

2 **Part B**

You are provided with the following

1. A metre rule
2. 3 pieces of thread (of 30cm each)
3. A clamp boss and stand
4. A mass labeled W.
5. 2 masses of 20g.
6. 2 masses of 50g.
7. 2 masses of 10g

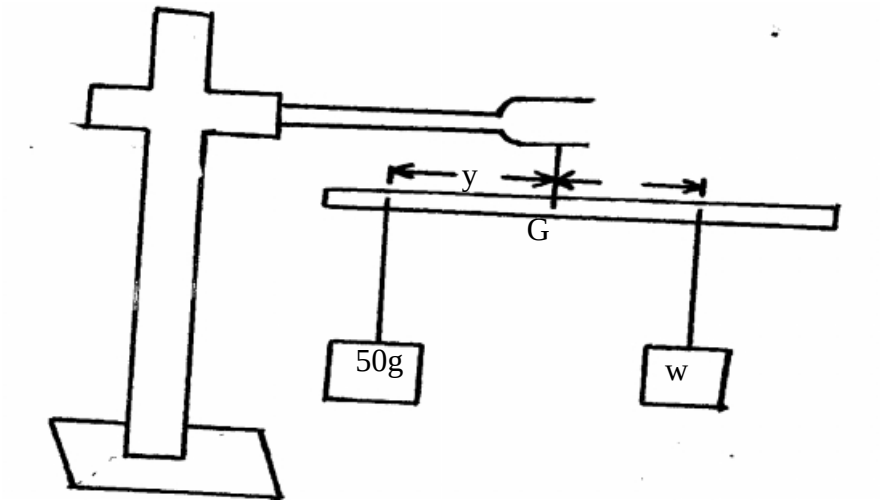
PROCEDURE

(a) Using a thread, suspend the meter rule from the stand and note down the centre of gravity G

G = ……Cm (1mk)

(b) (i) Hang the mass labeled w from the 65cm mark suspend the 50g mass from the other side and adjust its position till the system is in equilibrium as shown in the figure below. Record the values of

X =……m Y =……m (1mk)



(ii) Measure the distance x and record the value on the table below. Maintaining the point of suspension of the metre rule at G and the mass labeled W at 65cm, repeat the experiment for mass of 70g, 90g and 100g. enter the results in the table below.

Mass (g)	Distance $\frac{I}{X}$(m)
50	

70 90 100	

(iii) Given that $F = \frac{0.3\,TY}{x}$ and $F = 0.149$ find the value of T (3mks)