NAME……………………………………………………….. INDEX NO……………………………

SCHOOL……………………………………………………. CANDIDATES SIGNATURE………

DATE…………………..……………

232/3

PHYSICS (PRACTICAL)
PAPER 3
JULY/AUGUST 2014
TIME: $2^1/_2$ HOURS

KAMUKUNJI DISTRICT KCSE EVALUATION TEST - 2014

INSTRUCTIONS TO CANDIDATES

-Answer ALL the questions in the spaces provided in the question paper.

-You are supposed to spend the first 15 minutes of the $2^1/_2$ hours allowed for this paper reading the whole paper carefully before commencing with your work.

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

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

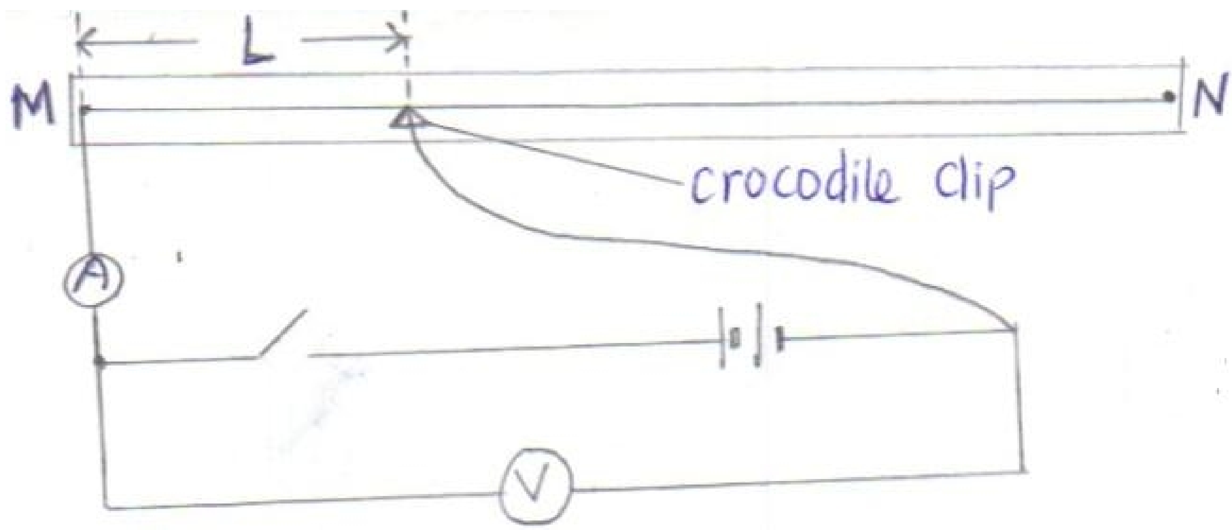
-Mathematical tables and Electronic calculators may be used.

FOR EXAMINER'S USE ONLY

Question	Maximum score	Candidate's score
1	20	
2	20	
Total	40	

1) You are provided with the following apparatus :
   - Resistance wire mounted on a scale labelled MN
   - Switch
   - Voltmeter
   - Ammeter
   - Two dry cells in a cell holder
   - Seven connecting wires

i) Set up the apparatus as shown in the figure below:



ii) Remove the crocodile clip from the resistance wire MN and close the switch. Record the voltmeter reading.

Y = ……………………………V (1mk)

iii) Attach the crocodile clip to the resistance wire such that L =10cm.

iv) Record the voltmeter and the ammeter readings in table 1.

v)Repeat procedures (iii) and (iv) for L=20cm , 30cm, 40cm, 50cm, 60cm, 70cm, and 80cm .

vi) Complete table 1

Table 1

Length (cm)	10	20	30	40	50	60	70	80
Current I(A)								
p.d. (V)								
Y-V(v)								
$\frac{V}{Y-V}$								
R= $\frac{V}{I}$ (Ω)								

(9mks)

vii) a) Plot a graph of $\frac{V}{Y-V}$ (y-axis) against R. (5mks)

b) Determine the slope of your graph. (3mks)

c) Given that the law relating V, Y and R is

$\frac{V}{Y-V} = \frac{MR}{5} + d$, determine the values of M and d. (3mks)

2) You are provided with the following:

- A glass block
- soft board
- a plane paper
- four optical pins
- four paper pins
- a protractor
- a 30cm plastic ruler

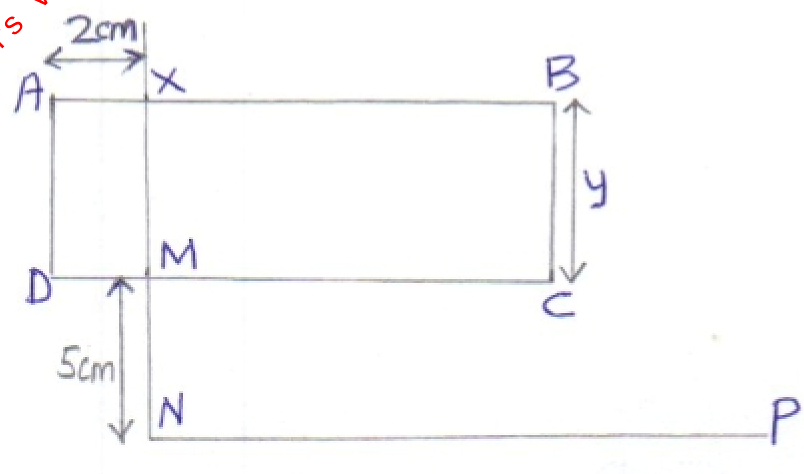
a) Fix the plane paper on the soft board using the four paper pins .

b) Place the glass block on the plane paper. Let the glass block rest on the paper from the broader face.

c) T race the glass block using a pencil

d) Remove the glass block.

Mark a point X on one of the longer side of the traced glass block as shown in figure 2. Point X should be 2cm from edge A.



e) 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 5cm from M.

g) Construct the line NP to meet the normal at N at 90^0. Line NP can be about 10cm.

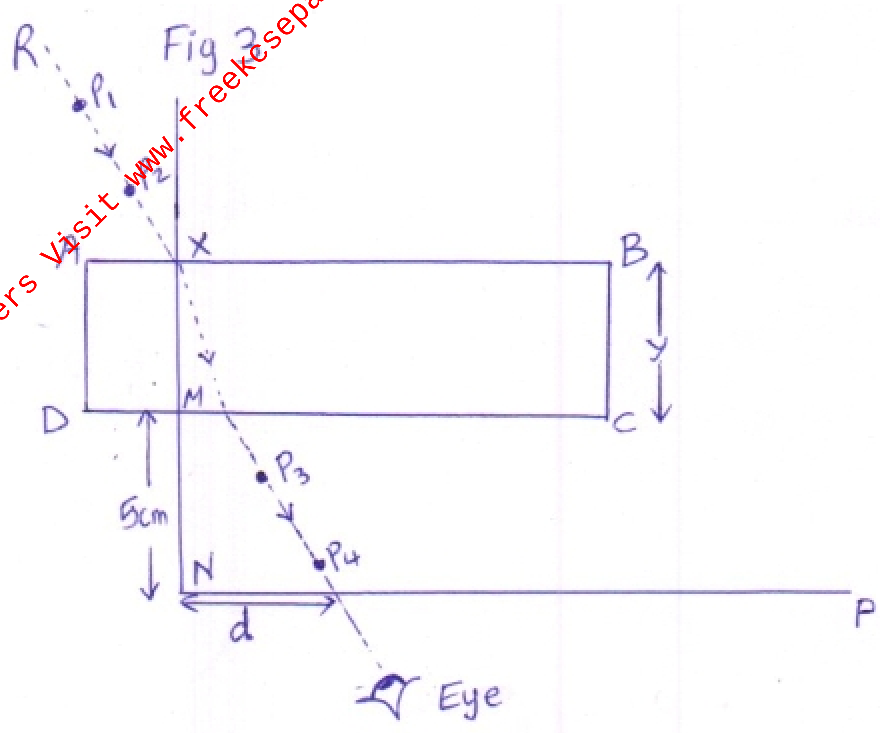
h) Using a protractor, construct an incident ray RX at an angle of incidence = 10^0. Fix two pins P_1 and P_2 along RX.

i) Replace the glass block to the traced figure.

j) View the path of the incident ray RX through the glass block using the other two pins P_3 and P_4. This can be done by ensuring that the images of P_1 and P_2 are in a straight line with the pins P_3 and P_4.

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

l) Measure the distance, d of the emergent ray from point N along line NP as shown in figure 3.



m) Record the corresponding values of d in table 2

Table 2

Angle of incidence i	10^0	20^0	30^0	40^0	50^0	60^0
Distance ,d (cm)						
Sin i						
Sin^2 i						

n) Repeat the procedure for other values of i. (12mks)

o) Plot a graph of $\sin^2$ i (y-axis) against d (5mks)

p) Calculate the gradient of the graph. (3mks)