Name: ……………………………………………………… Index No. …………………………

School: …………………………………………………. Candidate's Sign. …………...........

Date: ……………………………...

232/3
PHYSICS
PRACTICAL
PAPER 3
JULY/AUGUST 2014
TIME: 2 ¼ HOURS

TRANS-MARA EAST DISTRICT JOINT EVALUATION TEST

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

Physics
Paper 3

INSTRUCTIONS TO THE CANDIDATES:

- Write your **name** and **index number** in the spaces provided above.

- Answer *all* questions in the spaces provided in the question paper.

- You are supposed to spend the first 15 minutes of the 2 ¼ hours allowed for this paper reading the whole paper carefully.

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

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

- Mathematical tables, slide rules and calculators may be used.

- Take $\pi = 3.14$ and gravitational acceleration $g = 10\text{m/s}^2$

- Record your observations as soon as you make them.

For Examiners' Use Only

Question 1	n-12	o(i) 5	o(ii)	3	=20	TOTAL
Max. score	1	8	11			
Candidate's score	ii-i	vi-10	Vii(a)-5	vii2b-2	vii-c-2	

Total				

1. You are provided with the following apparatus
   - A glass block (rectangular)
    - Soft board
    - Plane mirror
    - Four optical pins
    - Four thumb pins
    - A protractor
    - A ruler

    Proceed as follows
    a) Fix the plane paper on the soft board using the four thumb pins
    b) Place the glass block on the plane paper (fixed on the soft board). Let the glass block rest on the paper from the broader face
    c) Trace the glass block using a pencil
    d) Remove the glass block
    e) Mark point X on the one of the longer side of the traced glass block a shown below. Point X should be 2cm from edge A
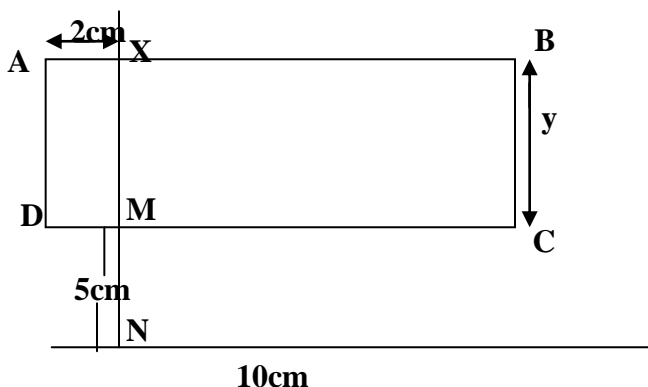
(e) Construct a normal at **x** to emerge through line **DC**. Let this normal meet line **DC** at point **M.**

(f) Mark point **N** along the emergent normal. 5cm from **M**

(g) Construct line **NP** to meet the normal at **N** at 90°. Line **NP** can be about 10cm

(h) Using a protractor, construct an incident ray Rx at an angle of incidence $c=10^{o}$. Fix two pins **P1** and **P2** 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 **P3** and **P4.** This can be done by ensuring that the images of pin **P1** and **P2** are in line with **P3** and **P4**

(k) Remove the glass block and draw the emergent ray through **P3** and **P4**

(l) Measure the distance of the emergent ray from point **N** along line **NP** as shown below
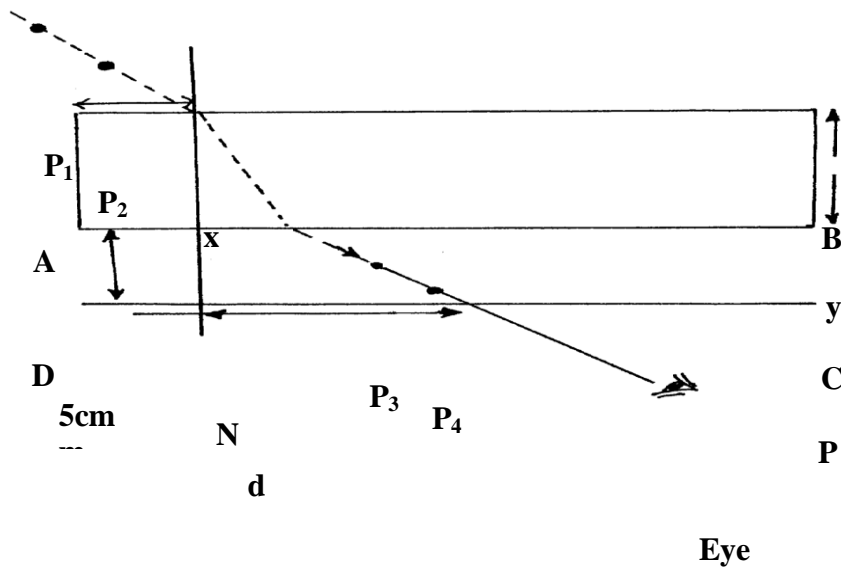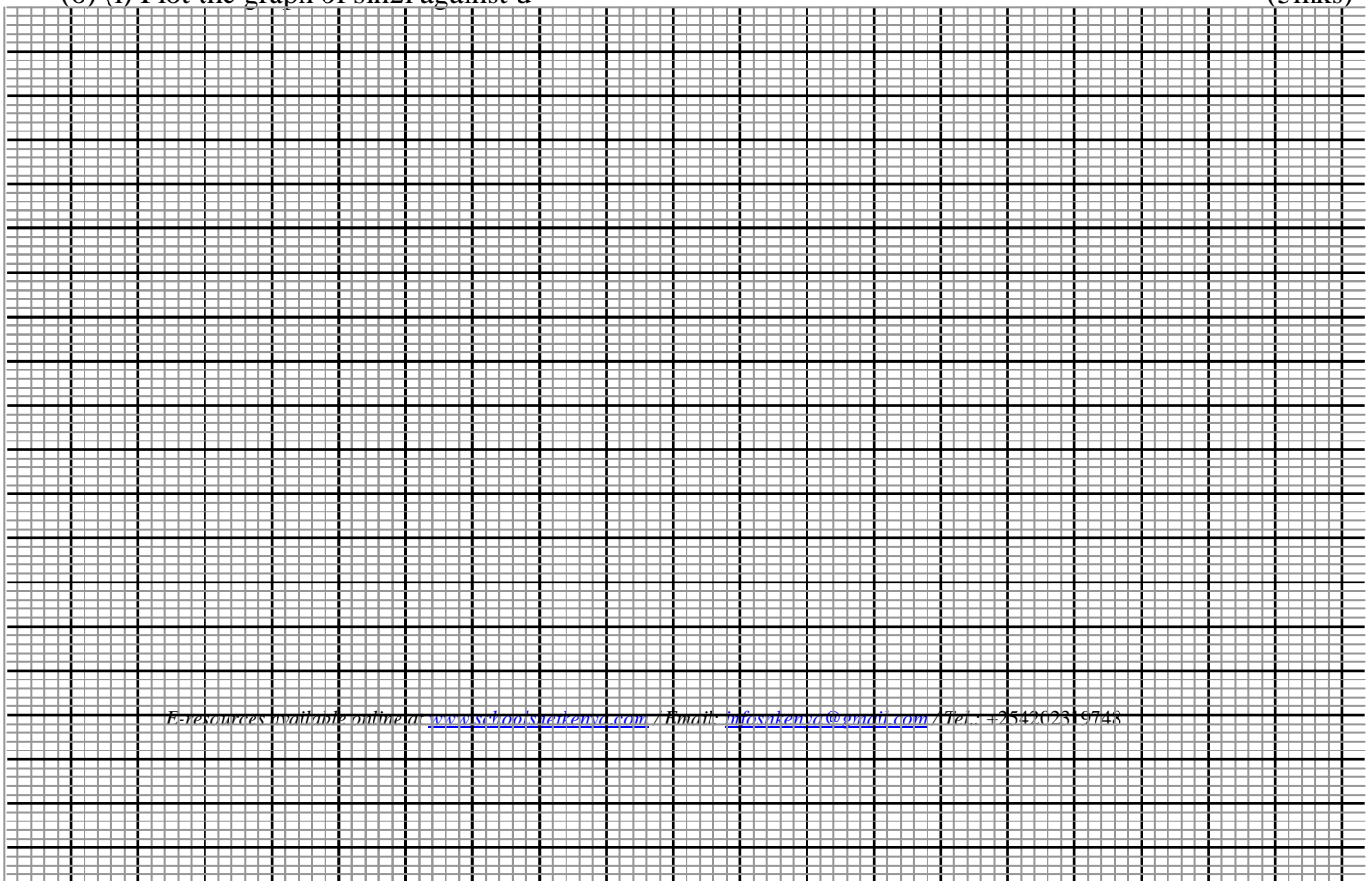
(m) Record the corresponding values of d in the table below

(n) Repeat the procedure for other values of i

Angle of incidence i^o	10	20	30	40	50	60
Distance d(cm)						
Sin i						
Sin ^{2}i						

(12mks)

(o) (i) Plot the graph of sin2i against d   (5mks)

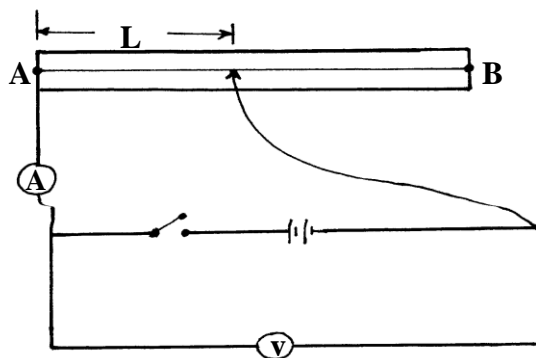(ii) Calculate the gradient of the graph   (3mks)

2.   You are provided with the following apparatus
   - Resistance wire fitted on a scale labeled **AB**
   - Switch
   - Voltmeter
   - Ammeter
   - Two dry cells
   - Six connecting wires

Proceed as follows:-

(i) Set up the apparatus as shown below

(ii)Remove the crocodile clip from resistance wire **AB** and close the switch. Record the voltmeter

reading X=_____volts   (1mk)

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

(iv) Record the voltmeter and ammeter reading in the table below

(v) Repeat the procedure in iii and iv for L=20cm, 30cm, 40cm, 50cm,60cm,70c, and 80cm
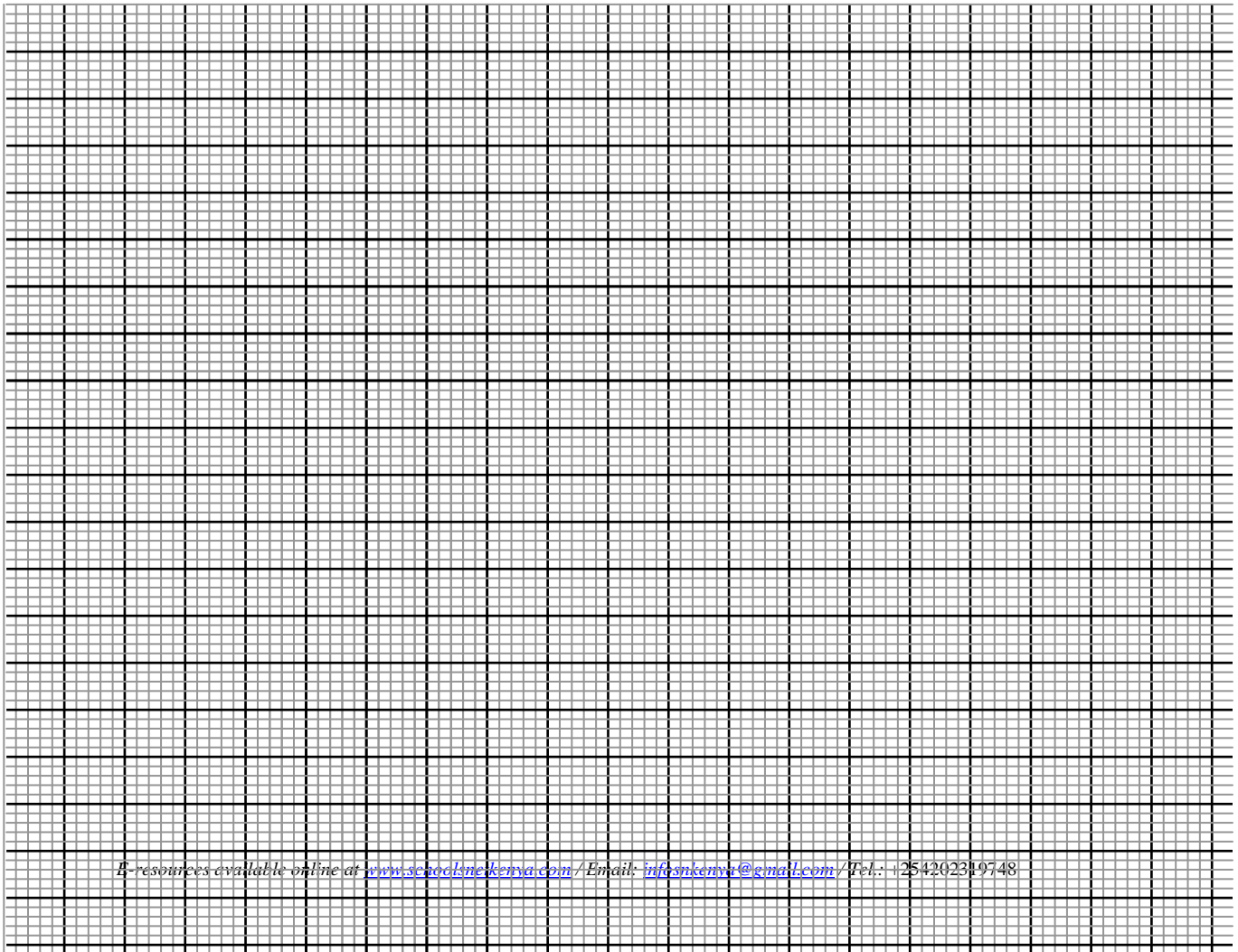
(vi) Complete the table below

Length L(cm)	10	20	30	40	50	60	70	80
Current I (A)								
p.d V (v)								
X-V(V)								
$\dfrac{V}{X-V}$								
$\dfrac{V}{I}=R(\Omega)$								

(10mks)

(viii) (a) Plot the graph of $\dfrac{v}{x-v}$ against **R**   (5mks)

(b) Determine the slope **S** of the graph   (2mks)

(c) The graph is given by the equation
$$\frac{V}{x-v} = \frac{mR}{5} + d$$
Determine the value of **m** and **d**   (2mks)

ANSWERS:
Order a copy of answers from www.schoolsnetkenya.com/order-e-copy
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