Name..... Index No.....

Candidate's signature.....
Date.....

232/3
PHYSICS
(PRACTICAL)
Paper 3
April/May. 2017
$2\frac{1}{2}$ hours

ALLIANCE GIRLS' HIGH SCHOOL
PRE - MOCK EXAMINATION

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

PHYSICS
(PRACTICAL)
Paper 3

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Instructions to Candidates

(a) Write your name and index number in the spaces provided above.
(b) Sign and write the date of examination in the space provided above.
*(c) Answer **all** questions on the question paper.*
(d) You are supposed to spend the first 15 minutes allowed for this paper reading the whole paper carefully before commencing your work and confirming your apparatus.
(e) Marks are given for a clear record of the observations actually made, (or their suitability and accuracy, and/or the use made of them.)
(f) Candidates are advised to record observations as soon as they are made
(g) Mathematical tables and Electronic calculators may be used
(h) Candidates should answer the questions in English

For Examiner's Use Only

Question	Maximum	Candidates Score
1	20	
2	20	
	Total	

Question 1

You are provided with the following apparatus.

- Micrometer screw gauge
- A plastic drinking straw.
- A white label with a horizontal line across the centre.
- Some plasticine mass 5.0g.
- Half a meter rule.
- A 200ml beaker
- A 100 ml measuring cylinder.
- Two rubber bands.
- Seven shoe tacks
- Electronic beam balance.
- jockey

Proceed as follows:

(a) Place the seven shoe tacks on the electronic beam balance and record the mass M.

M=.....kg (1mark)

(b) Given that W = 1.429M, where W is the weight of one tack, Determine the value of W.

..... (1mark)

.....

(c) (i) Fix the half metre rule vertically against the measuring cylinder using rubber band with the zero mark of the half metre at the bottom of the measuring cylinder.

(ii) Measure 150 ml of water using the beaker and pour it into the measuring cylinder.

(iii) Roll the plasticine into a spherical ball and push one end of the straw into the plasticine to block one end.

(iv) Insert the drinking straw with the plasticine into the measuring cylinder such that it floats vertically

(v) Remove the straw and fix the white label at 4cm above the plasticine so that the line at the centre runs horizontally. Ensure the line is submerged under the water as shown below

Record the position of the horizontal line as indicated on the half metre rule.

L_0 = ...cm (1mark)

(vi) Also record this value in the table as L when there is no shoe tack in the straw.
Insert one shoe tack into the straw and record the new level L of the horizontal line in the table.
Repeat the procedure for each number of shoe tacks indicated while recording the level each time.

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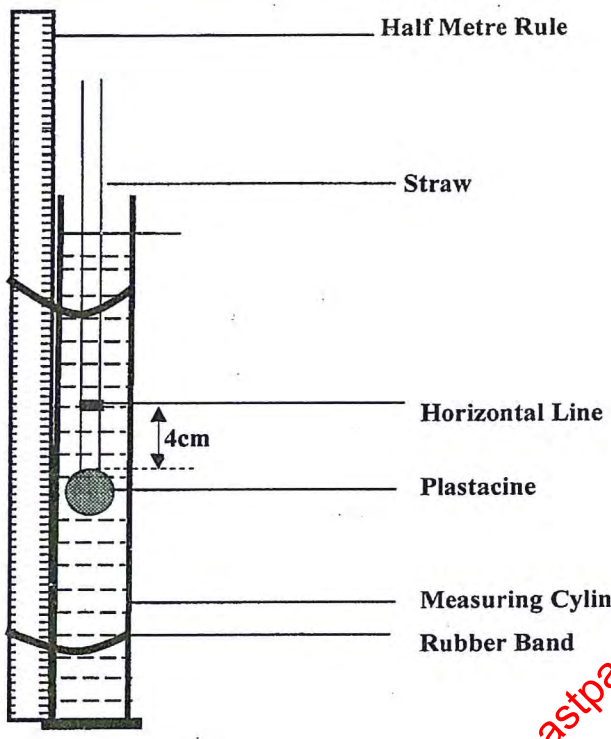

Complete the values of L with the number of stacks on the table below.

No of shoe tacks N	0	1	2	3	4	5	6	7
Level L (cm)								
$h=L_0-L$ (m)								

(6marks)

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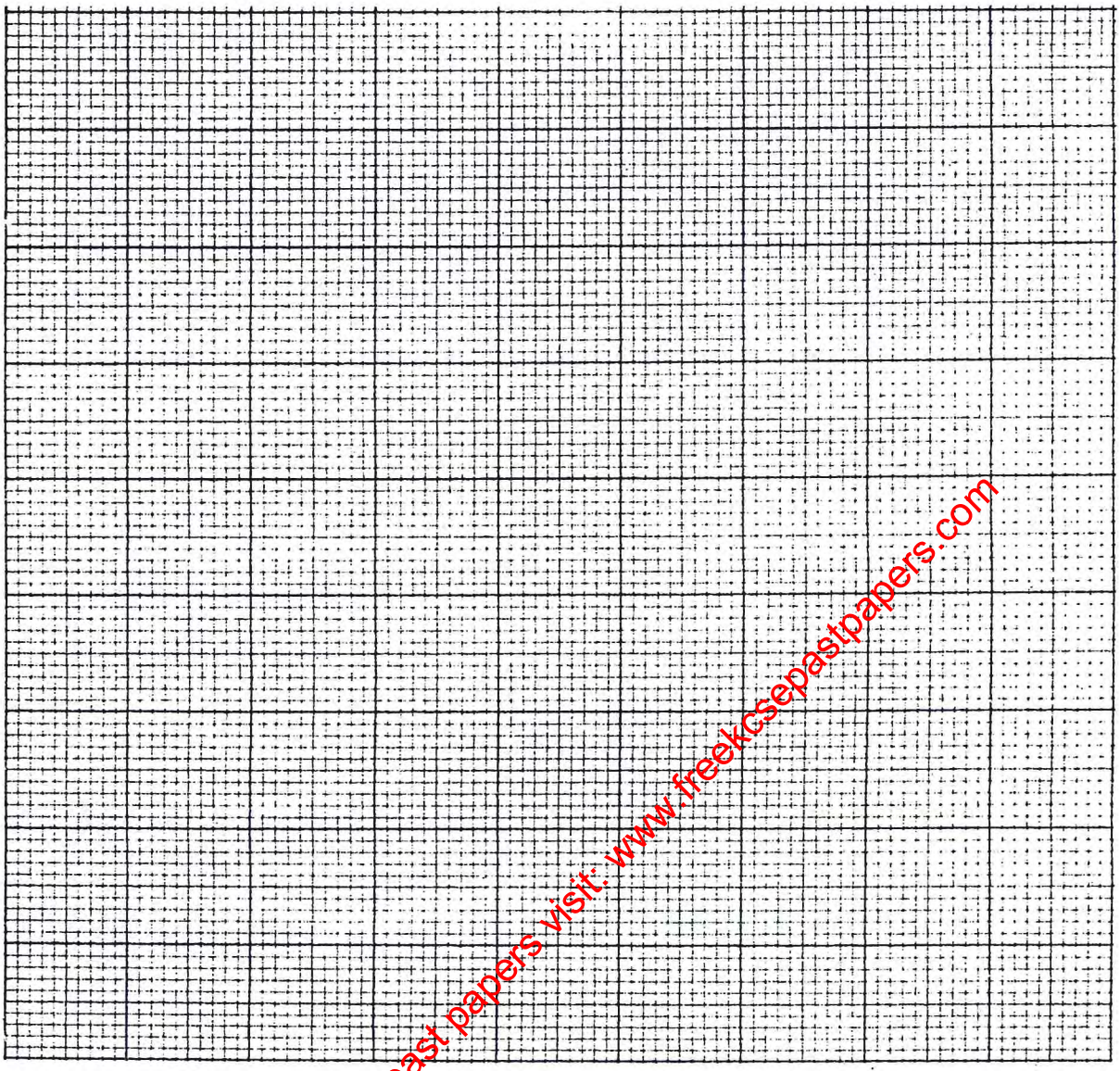
iii) On the grid provided Plot a graph of h against N (4marks)



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iv) Determine the Slope S of the graph (3marks)

.....

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.....

v) Given that the upthrust U of one shoe tack is given as $U = \frac{4\pi S}{10000}$, determine the value of U. (2marks)

.....

.....

.....

(vi) Determine the apparent weight of one shoe tack. (2marks)

.....

.....

Question 2

You are provided with the following:

- A carbon resistor marked X
- Resistance wire marked R
- Micrometre screw gauge (to be shared)
- Voltmeter
- Ammeter
- Resistance wire mounted on a wire labelled L
- A cell , Cell-holder
- Centre-zero Galvanometer
- 8 connecting wires
- jockey

(a) Using the micrometre screw gauge, measure and record the diameter D of the resistance wire R provided

D..... (m) (1mark)

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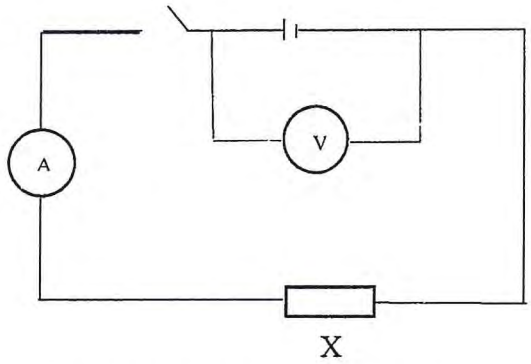
(b) Set up the following circuit.



(i) Record the voltmeter reading when the switch is open.

E = ...V (1mark)

(ii) Close the switch and record the voltmeter and ammeter readings V and I .

V = ...V (1mark)

I = ...A (1mark)

(iii) Now connect the voltmeter across the carbon resistor X and record voltmeter reading V_1

V_1 = ...V (1mark)

(iv) Compare the values of V and V_1 giving a reason why they are different. (2marks)

.....

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(v) Calculate X_1 given that $X_1 = \frac{V_1}{I}$ (1mark)

.....

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(vi) Calculate the internal resistance r of the cell given that $r = \frac{E-V}{I}$ (2marks)

.....

.....

(vii) Calculate X_2, given that $E = I(X_2 + r)$ (1mark)

.....

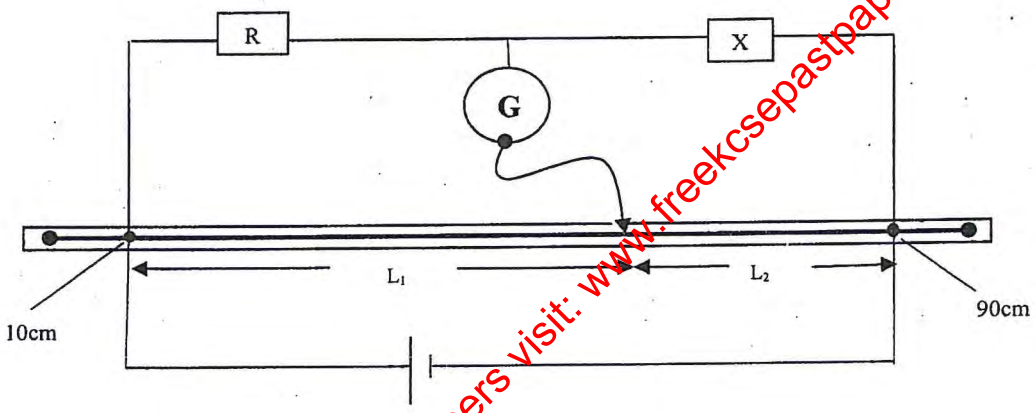
.....

.....

(vii) Calculate X the average value of X_2 and X_1

X = ... (1mark)

(c) Connect another circuit as shown below:



(i)Move the Sliding pointer along the resistance Wire until the galvanometer reading comes to Zero. Record L_1 and L_2

L_1 =..... L_2 = ... (1mark)

(ii) Obtain the value of the unknown resistance R given that; $\frac{R}{X} = \frac{L_1}{L_2}$ (2marks)

.....

.....

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Interchange the positions of R and X and repeat the procedure in (i) above and calculate the value of R using similar argument.

L_1..... L_2..... (1mark)

$$\frac{X}{R} = \frac{L_1}{L_2}$$

.....

.....

(d) Calculate the average value of R. (2marks)

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(i) Given that, $R = \frac{35S}{100\pi D^2}$ determine the value of S. (2marks)

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