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

School ..... Candidate's signature .....

Date .....

232/3

PHYSICS
Paper 3

October/November 2015
Time 2½ hours

KANDARA SUB-COUNTY SECONDARY SCHOOLS
FORM THREE JOINT EXAMINATION

Kenya Certificate of Secondary Education

PHYSICS

Paper - 232/3

October /November 2015

Time: 2½ hours

INSTRUCTIONS TO CANDIDATES

- Answer ALL the questions in the spaces provided.
- You are not allowed to start working with the apparatus for the first 15 minutes of the 2½ hours allowed in this paper.
- This time is to enable you to read the questions and make sure you have all the apparatus needed.
- Marks are given for a clear record of the observations actually made, their suitability and accuracy, 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.

EXAMINER'S USE ONLY

Question 1					
Marks	c	d	e	f	TOTAL
Score	8	5	3	4	20
Candidates score					

Question 2								
Marks	b	c	d	e	f	g	h	TOTAL
Score	1	6	5	2	1	2	3	20
Candidates score								

Total Score 40

This paper consists of 6 printed pages
Candidates should check the question paper to ensure that all the printed pages are printed as indicated and no questions are missing.

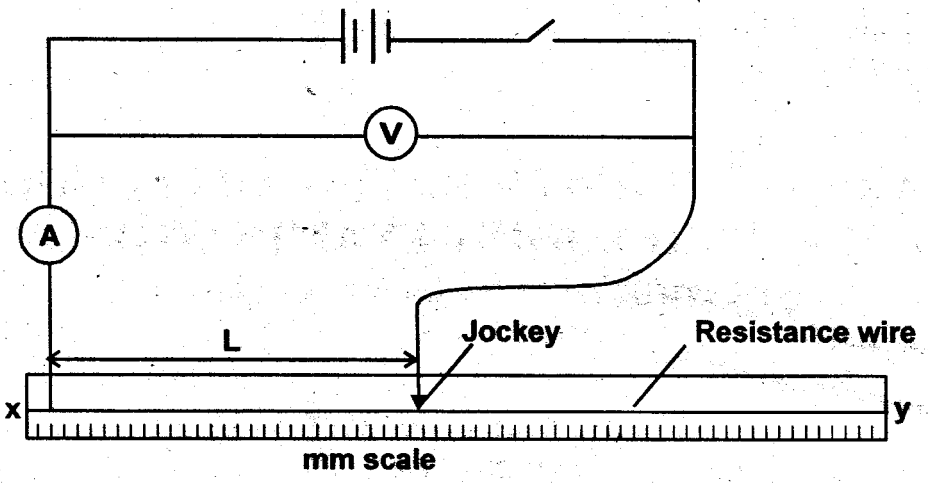
Que. 1

You are provided with the following

- two new dry cells
- an ammeter 0 - 1 A
- a voltmeter 0 - 5 V
- a resistance wire labelled XY on mm scale
- Jockey or crocodile clip
- cell holder
- switch
- six connecting wires at least three with crocodile clips at one end.

a) Set up the apparatus as in the figure 1 below.

Fig 1



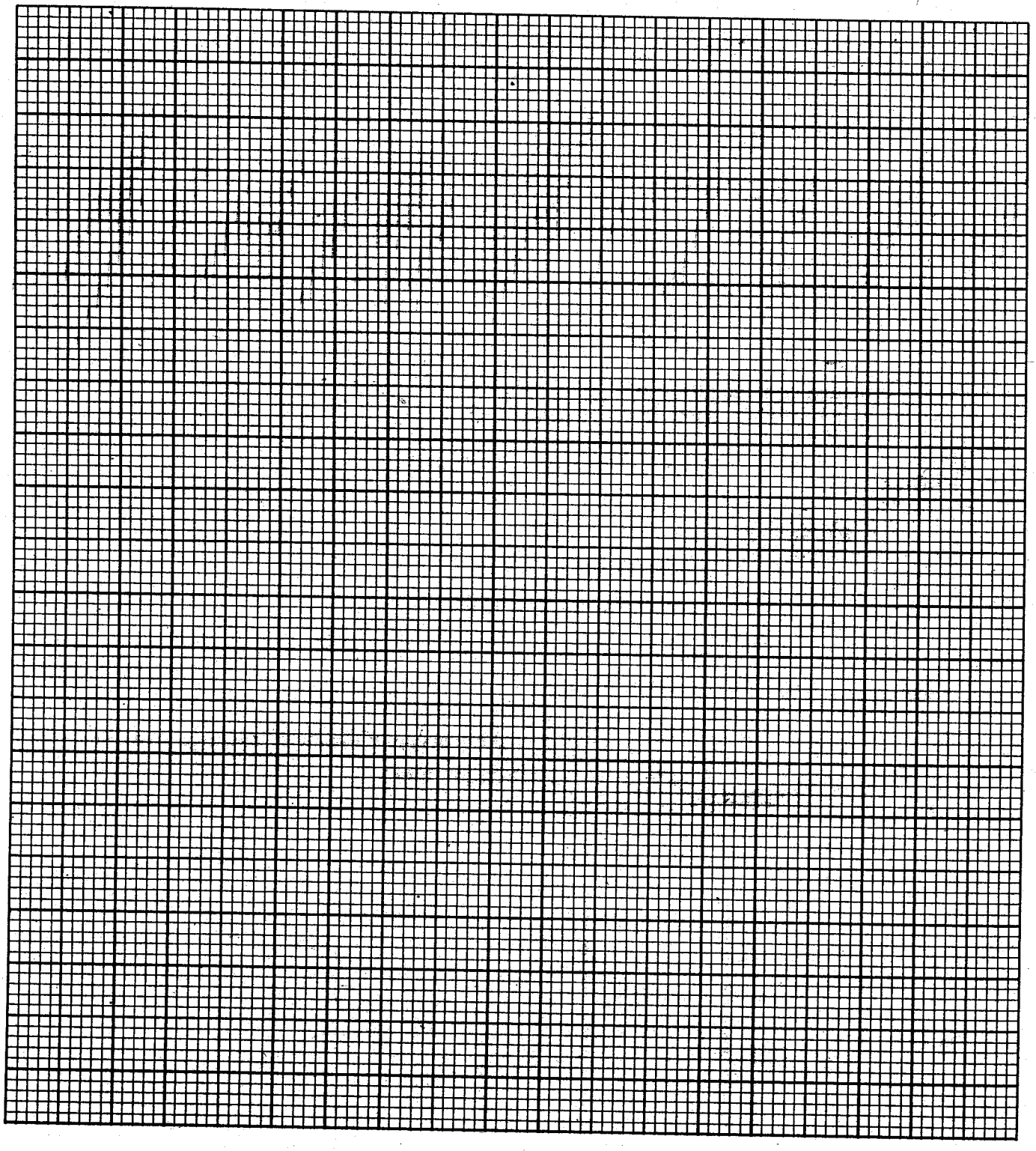
b) Close the switch and place the jockey in contact with the resistance wire such that the length L of wire XY = 0.20m. Measure and record the current I, through the wire XY and the corresponding p.d., V across it and enter the results in table 1.

c) Repeat procedure (b) above for the other values of L given. Record the corresponding values of I and V.

Table 1 (8 marks)

L(cm)	0.2	0.4	0.5	0.6	0.7	0.9	1.0
p.d. (V)							
I (A)							
R (Ω)							
$\frac{1}{I}(A^{-1})$							

d) Plot a graph of $\frac{1}{I}$ (y - axis) against R(x-axis) (5 marks)



e) Determine the slope, S, of your graph. (3 marks)

f) Given that I and R of the graph are related by the equation $\frac{1}{I} = \frac{R}{E} + \frac{r}{E}$ use your graph to determine the value of

E=

(4 marks)

.....

.....

r =

.....

.....

2. You are provided with the following
- A pendulum bob with a piece of thread attached.
- Two wooden blocks.
- Clamp, boss and retort stand.
- Metre rule.
- Half metre rule attached to a wooden block.
- Cellotape (2 pieces about 10cm long)
- Stop watch or clock.

a) Fix the thread between the wooden blocks and fasten in the clamp.

Adjust the thread so that the length L in the figure 2 below is 50.00cm

Fix the metre rule horizontally to the bench using the cellotape provided.

Adjust the clamp so that the pendulum bob is next to the end of the metre rule as shown.

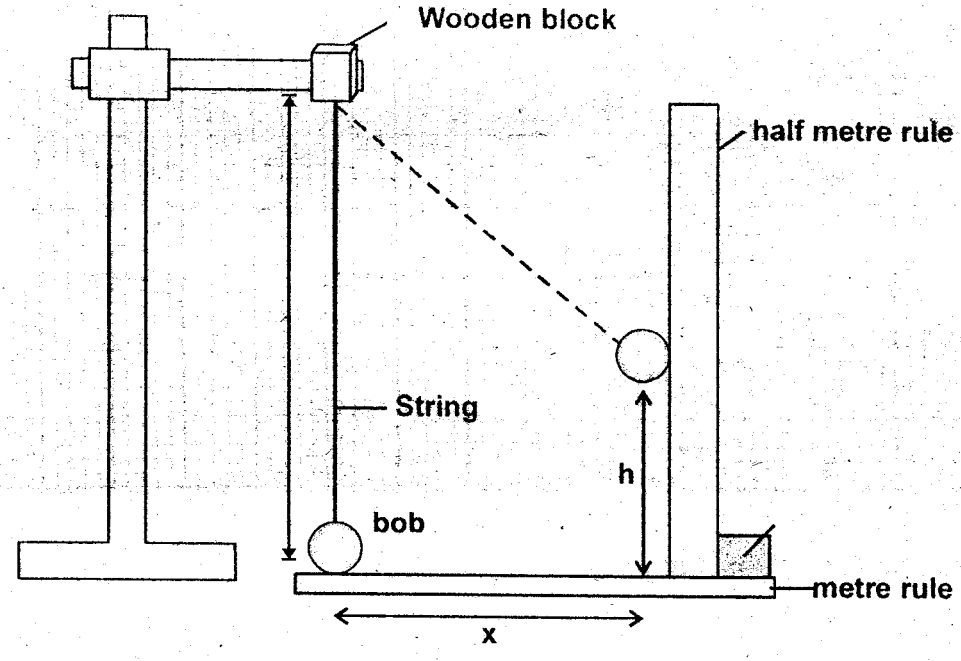


Fig 2

b) Displace the marble by a horizontal distance x = 20cm. And measure the corresponding vertical displacement, h;

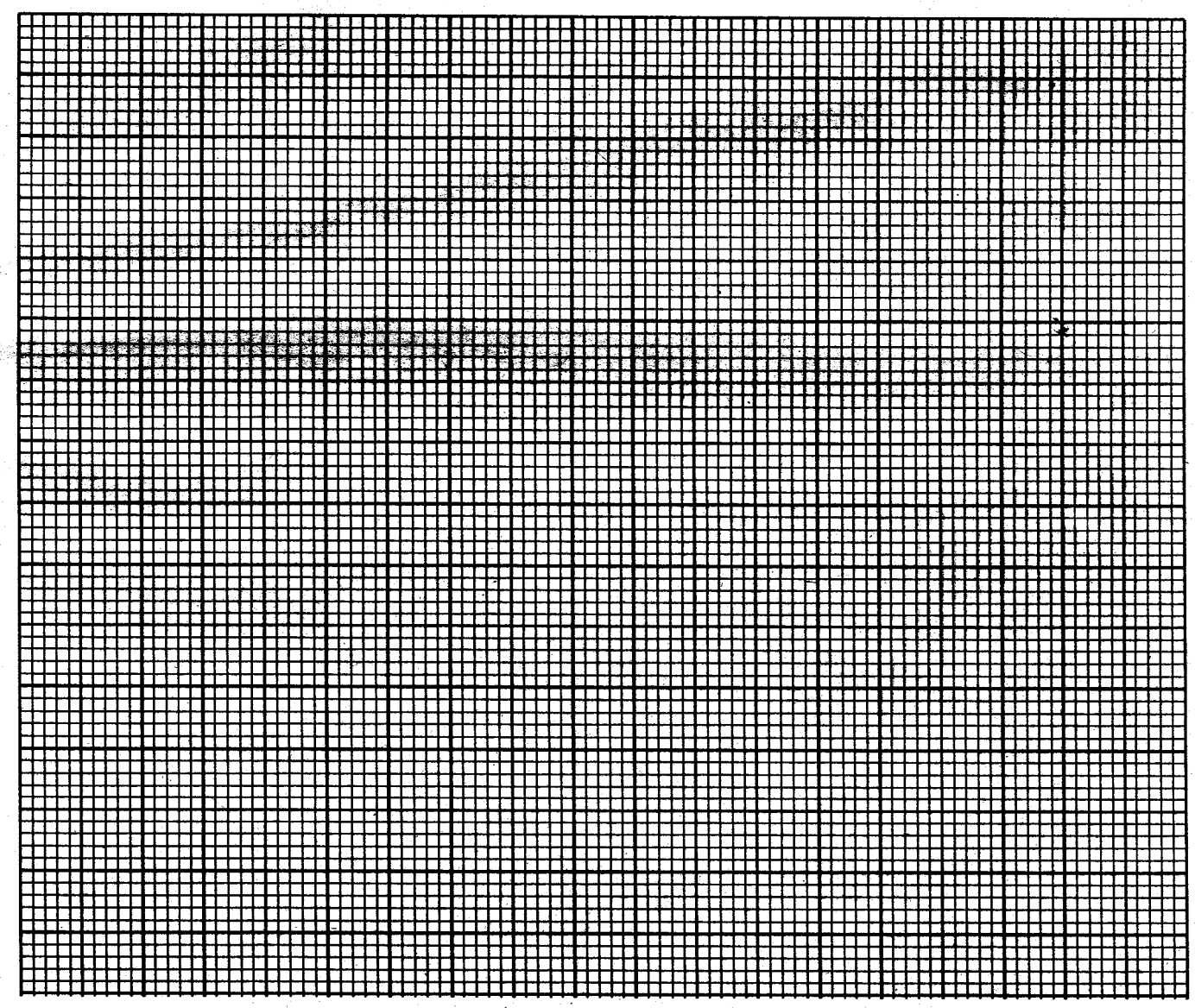
h = ...cm

(1 mark)

c) Repeat the experiment to find h for each of the following value of x; 25cm, 30cm, 35cm, 40cm and 45cm. the complete the table below. (6 marks)

x(cm)	h(cm)	x^2cm^2	$\frac{x^2}{h}$ cm
20			
25			
30			
35			
40			
45			

d) Plot a graph of $\frac{x^2}{h}$ against h. Draw the best line of fit. (5 marks)



e) Determine the slope of the graph. (2 marks)

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.....

f) From the graph, find the value of $\frac{x^2}{h}$ when h = 0 (1 mark)

.....

.....

g) Raise the clamp slightly without changing the value of L so that the marble is free to swing.

Determine the period, T for one complete oscillation by timing 20 oscillations

Time for 20 oscillations = ... (1 mark)

Period, T = ... (1 mark)

h) Calculate the value p given $T=2\pi\sqrt{\frac{p}{g}}$ where g = 10m/s² (3 marks)