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

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

Date: ....

232/3
PHYSICS
PAPER 3
PRACTICAL
MAY/JUNE 2016
TIME: 2 ½ HOURS

ALLIANCE HIGH SCHOOL
PRE-TRAILS
Kenya Certificate of Secondary Education (K.C.S.E.)

INSTRUCTIONS TO CANDIDATES:

- *Write your **name** and **index number** in the spaces provided above.*
- *Sign and write the **date** of the examination in the spaces provided above.*
- *You are supposed to spend the first 15 minutes of the 2 ½ 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.*

For Examiner's Use Only

Question 1

	(a)	(b)	(e)	(f)i	(ii)	(iii)	(iv)	Total
Marks Score	1	1	6	5	3	3	1	20
Candidate's score								

Question 2

	(a)	(c)	(d)i	(d)ii	(d) iii	(d)iv	Total
Marks Score	3	6	5	3	2	1	20
Candidate's score							

*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. **You are provided with the following apparatus:**
   - Pendulum bob.
   - Thread about (1.5m)
   - Stop watch
   - Retort stand boss and clamp
   - Vernier callipers
   - Beam balance
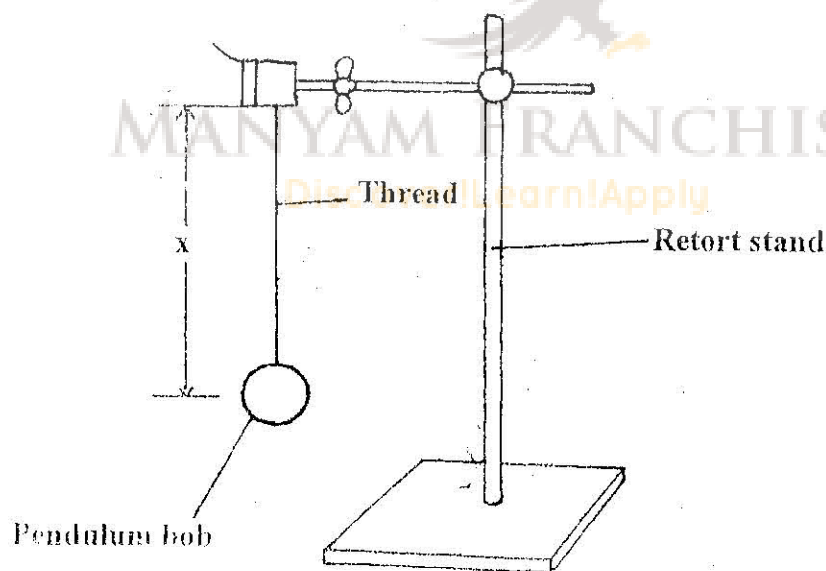   - Metre rule
   - Two pieces of wood.

(a) Measure the diameter of the pendulum bob.

d = _____ m.   (1 mark)

(b) Determine mass of the pendulum bob using beams balance.

m = _____ kg.   (1 mark)

(c) Set up the apparatus as shown in the figure below.

Pendulum bob

(d) Tie the pendulum bob to the thread provided. Measure the length of the thread to X = 1.0m and fix it as shown above. The pieces of wood should help hold thread firmly.

(e) Displace the pendulum bob through a small angle. Determine the time taken for it to make complete oscillations. Repeat the procedure for other values of x as shown in the table and record the corresponding time.   (6mks)

2

Length X (m)	Time for 20 oscillations (s)	Period T (s)	T^2 (s^2)
0.30			
0.40			
0.50			
0.60			
0.70			
0.80			
0.90			
1.00			

(f) (i) Plot the graph of T^2 (y-axis) against x   (5marks)
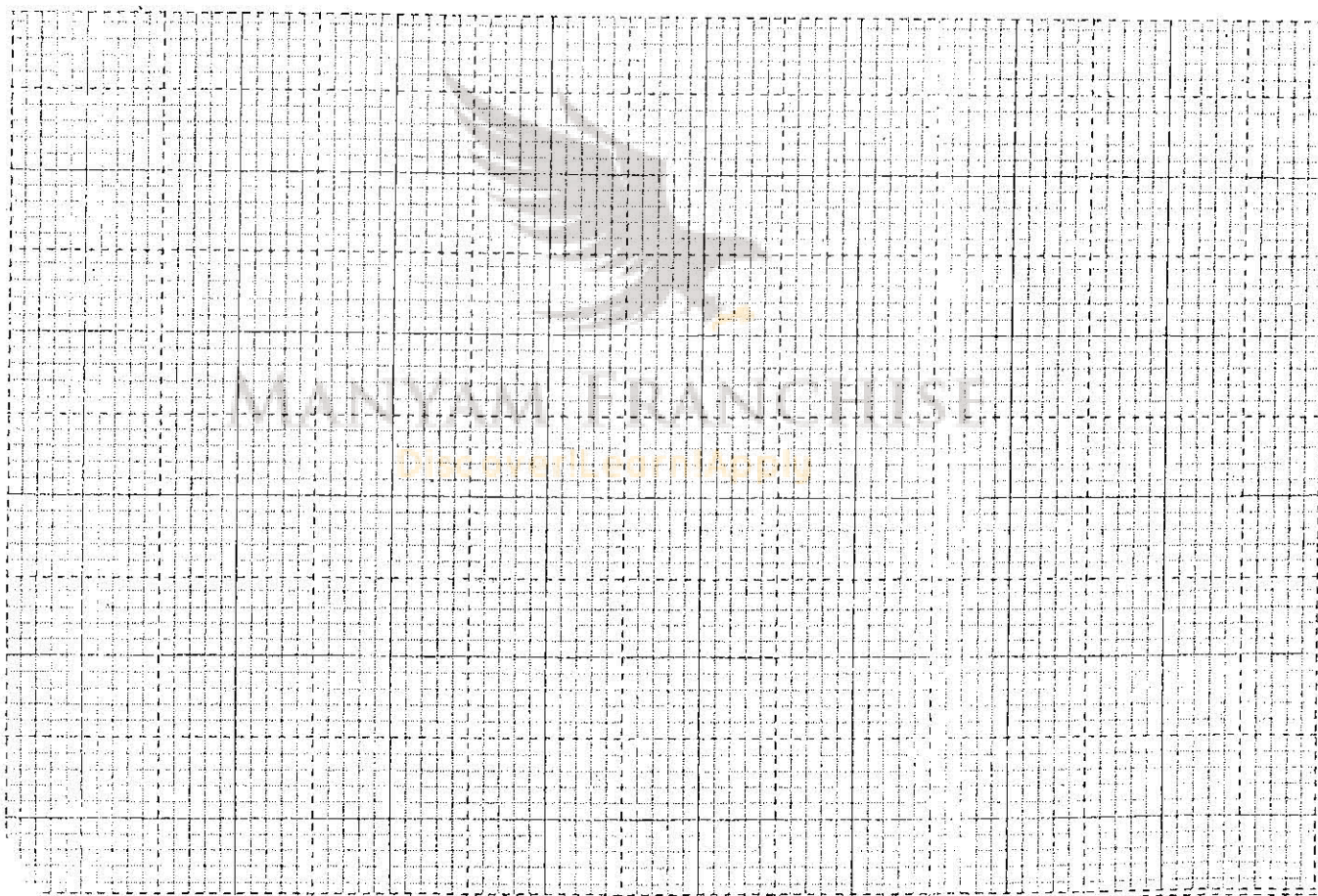
(ii) Calculate the slope, **s** of the graph. (3mks)

(iii) The graph of the equation is given by the equation:

$$T^2 = \frac{4\pi^2 x}{P}$$

Calculate the value of P. (3mks)

(iv) The weight of the pendulum bob is given by the equation, $w = mP$, calculate the weight, **w** of the bob. (1mk)
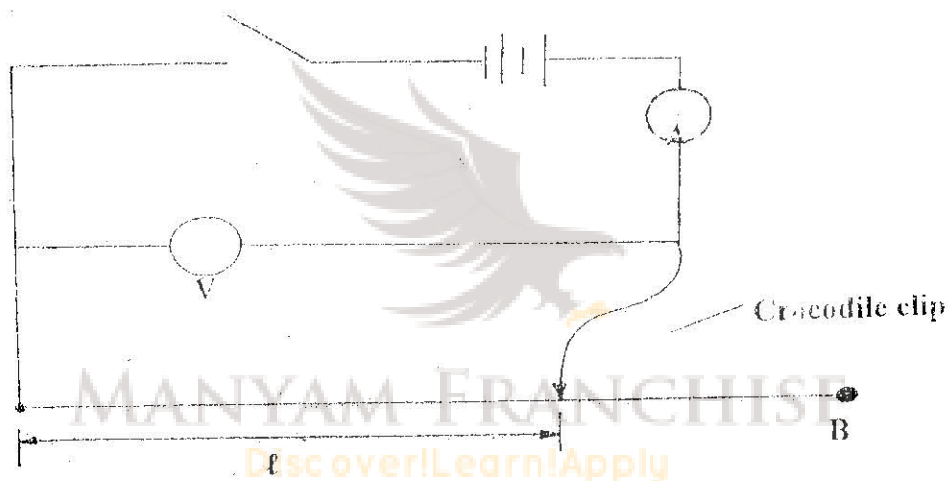
QUESTION TWO

2. You are provided with the following:

- An ammeter
- A voltmeter
- A switch
- A cell holder and two dry cells
- A wire mounted on a mm scale labeled AB
- Six connecting wires, at least three with crocodile clips

Set up the apparatus as shown in the circuit diagram below in figure 2.

Figure 2

Crocodile clip

(a) Close the switch, using the voltmeter and ammeter measure the voltage and current when the distance L is approximately 100cm.

Vi =.............................volts (1mk)

Ii =.............................amperes (1mk)

Hence determine the constant R given that;

$$R = \frac{Vi}{Ii}$$

R=.............................Ω (1mk)

Open the switch

(b) Adjust the position of the crocodile clip on the wire AB to a point such that the length L of the wire in the circuit is 10cm. close the switch.

Read and record the voltmeter and ammeter readings. Open the switch.

(c) Repeat the procedure in (b) above for other values of L shown in the table 2 below. Complete the table.

Table 2

Distance L (cm)	10	20	30	40	50	60
V (volts)						
I (Amperes)						
R=V/I						
1/I						

(6mks)

(d) (i) On the grid provided, plot a graph of 1/I (y-axis) against R. (5mks)

(ii) Determine the slope of the graph. (3mks)

(iii) Determine e.m.f of the battery given that E = V + Ir. (2mks)

(iv) Using the same graph, determine the internal resistance of the battery. (1mk)