

Name: Index No.

School: Candidate's Sign.

Date:

232/3

PHYSICS

PAPER 3

PRACTICAL

JULY/AUGUST 2011

TIME: 2 ½ HOURS

MUMIAS DISTRICT JOINT EVALUATION EXAM

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

Physics
Practical

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

	(b)	(d)	(e)	(f)	(g) (i)	(ii)	Total
Marks Score	1	8	5	3	1	2	20
Candidate's score							

Question 2

Section	A				B				
	(a)	(b)	(c)	(e)	(d)	(e)	(f)	(g)	Total
Marks Score	1	2½	1	2½	6	5	1	1	20
Candidate's score									

This paper consists of 6 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.

$d = \underline{\hspace{2cm}}$ m.

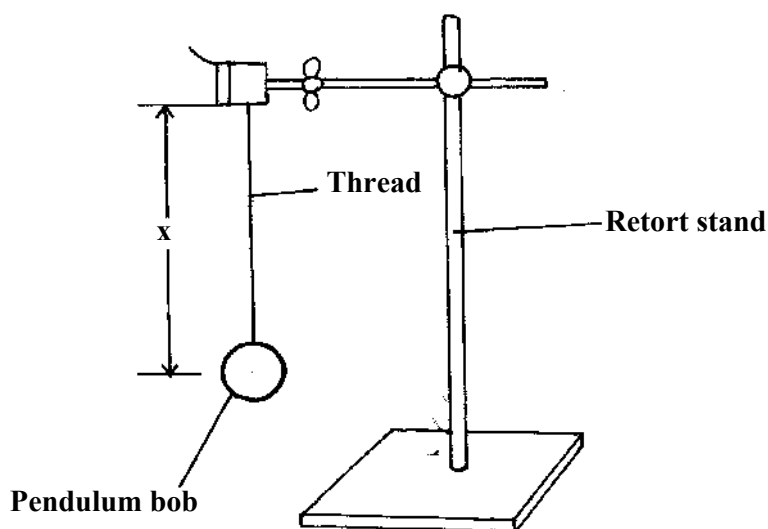
(1mk)

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

$m = \underline{\hspace{2cm}}$ kg.

(1mk)

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



(d) Tie the pendulum bob to the thread provided. Measure the length of the thread to $X = 1.0\text{m}$ 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 make 20 complete oscillations. Repeat the procedure for other values of x as shown in the table and record the corresponding time.

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

(5mks)



(ii) Calculate the slope, s of the graph.

(2mks)

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

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

Calculate the value of P .

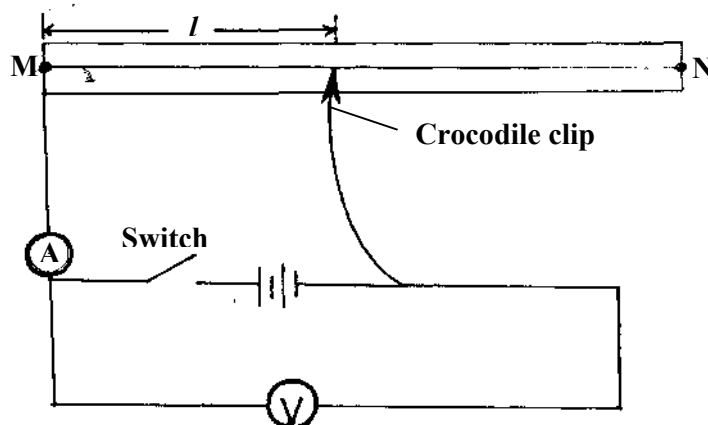
(2mks)

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

2. (a) You are provided with the following apparatus:

- Resistance wire fitted on a scale labeled MN
- Switch
- Voltmeter
- Ammeter
- Two dry cells
- Six 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 $l = 10\text{cm}$

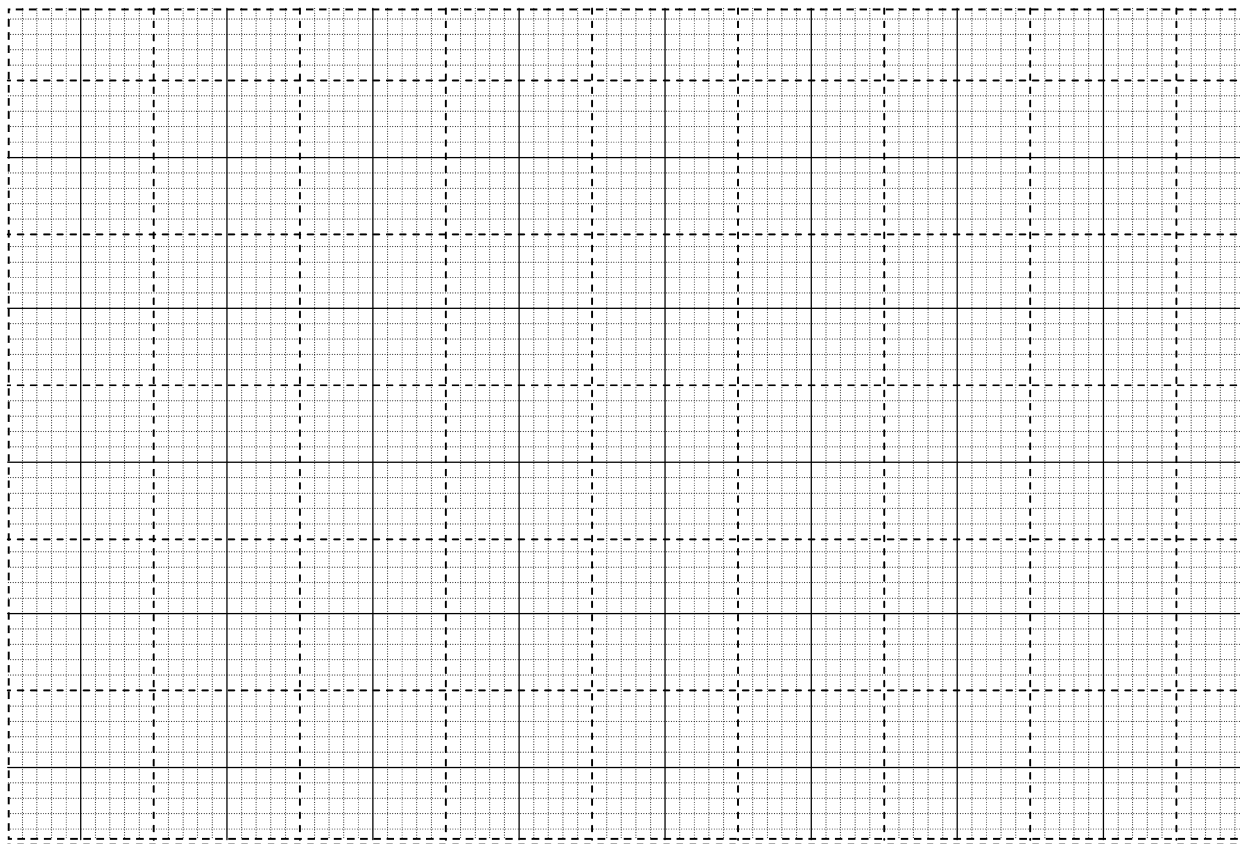
(iv) Record the voltmeter and ammeter readings in the table below.

(v) Repeat the procedure in (iii) and (iv) for $l = 20\text{cm}$, 30cm , 50cm and 80cm

(vi) Complete the table below:

Length, $l = \text{cm}$	10	20	30	50	80
Current $I \text{ (A)}$					
p.d. $V \text{ (V)}$					
$Y - V$					
$\frac{V}{Y - V}$					
$\frac{V}{I} = R \text{ (}\Omega\text{)}$					

(viii) (a) Plot a graph of $\left(\frac{V}{Y - V}\right)$ (vertical axis) against R . (5mks)



(b) Determine the slope, m of the graph. (3mks)

(c) The graph is given by the equation

$$\frac{V}{Y - V} = \frac{MR}{5} + d$$

Determine the value of m and d.

(3mks)