**232/3**

**PHYSICS**

**PAPER 3**

**JULY /AUGUST 2015**

**GATUNDU JOINT EXAMINATION - 2015**

**Kenya Certificate of Education**

**Physics Paper 3**

**Instructions to candidates**

* **This paper consists of two Questions 1 and 2.**
* **Answer all the questions in the spaces provided.**
* **Electronic calculators, mathematical tables may be used.**
* **All numerical answers should be expressed in the decimal notations.**

|  |  |  |
| --- | --- | --- |
| **QUESTION** | **MAX MARKS** | **CANDIDATE’S SCORE** |
| **1** | **20** |  |
| **2** | **20** |  |
| **TOTAL** | **40** |  |

QUESTION 1

You are provided with the following:

* Wooden plank 100cm long or a metre rule
* two knife edges
* Retort stand, boss and clamp
* Half metre rule
* An optical pin and a piece of cello tape
* Five 100g masses or (two 200g masses and one 100g mass)

Proceed as follows

1. Balance the wooden plank (metre rule) on a knife edge and record the point of balance.

--------------------------------------------------------cm (2marks)

**Fix a pointer on the plank at this point**

1. Put the wooden plank so that it lies horizontally on the two knife edges provided.
2. Clamp the half metre rule vertically and place it near the pointer on the wooden plank as shown in the figure

 Half meter rule

 Pointer

 400g

 100g

 d

1. Adjust the knife edges such that the distance d, between them is equal to 90cm and they are equidistant from the position of the pointer.
2. Read and record the position of the pointer on the vertical scale

X0 ………………………………………………………………………………………………cm (1mark)

1. Suspend a mass of 500g at the center of the wooden plank (where the optical pin is fixed as a pointer). Read and record the position of the pointer on the scale.

X1 =………………………………………………………………………………………………cm (1mark)

1. Hence find the depression, X of the metre rule at its mid-point and fill the table
2. Remove the mass from the metre rule.

h) Repeat procedures ( c ) to (g) for values of d equal to 80 70 60 50 and 40cm (8 marks)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| d(cm) | 90 | 80 | 70 | 60 | 50 | 40 |
| X0(cm) |  |  |  |  |  |  |
| X1cm) |  |  |  |  |  |  |
| X (cm) |  |  |  |  |  |  |
| Log10 d |  |  |  |  |  |  |
| Log 10X |  |  |  |  |  |  |

Question 2

You are provided with the following

-A stop watch

A milliameter

-A capacitor

-Two switches **S1**and **S2**

-Six 1000 Ohms Resistors

-a dry cell and a cell holder

Seven pieces connecting.

At least six crocodiles clips.

Proceed as follows

1. Connect the circuit as shown in figure 1.0 bellow

E



1. Close switch S1first and then switch S2and record the maximum reading of the milliameter in the Table 1.0 below.
2. Open switch S1 and at the same instant, start the stop clock.Record the time taken for the value of current to fall to a half of its original value.
3. Repeat step (b) and (c) with other values of R(Ω).

Table 1.0 (6 mks)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Resistance,R (Ω) | 2000 | 3000 | 4000 | 5000 | 6000 | 7000 |
| Maximum Current I(mA) |  |  |  |  |  |  |
| Time t(s) |  |  |  |  |  |  |

e(i) On the grid provided, plot a graph of R(Ω) against t (s) (5mks )

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

(iii)Given that R = t

 k

Use the graph to determine the constant k. (2mks)

f) Why should the switch S1 be closedfirst and S2 later?. (2mks)

f) What is happening to the capacitor when the milliammeter reading is decreasing? (2mks)