**NAME………………………………………………...INDEX NUMBER……………………**

**ADM NO……………………………………DATE:………………… SIGN…………………**

**232/3**

**PHYSICS**

**PAPER 3 (PRACTICAL)**

**JULY/AUGUST 2024**

**TIME: 21/2HOURS**

**NAKURU NORTH SUB -COUNTY JOINT MOCK 2024**

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

**PHYSICS PAPER 3**

**2½ HOURS**

**INSTRUCTIONS TO CANDIDATES**

* Write your **Name, Index number** and **Admission number**in the spaces provided above.
* This paper consists of **Two** parts (Question 1 and Question 2)
* Answer all the questions in the spaces provided
* All working must be clearly shown.
* Mathematical tables and electronic calculators may be used

**For Examiner’s Use Only**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Question 1** | **a** | **a(i)** | **a (ii)** | **b** | **b(i)** | **(iv)** | **TOTAL** |
| 3 | **1/2** | **1/2** | 3 | **5** | **2** |
| **Question 2** | **a (i)** | **a(ii)** | **b** | **c** | **d** |  |  |
| **1** | **2** | **6** | **5** | **3** |  |
| GRAND TOTAL |  |  |

***This paper consists of 7 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.***

**QUESTION 1**

**You are provided with the following:**

* Salt solution in a 250ml container
* Two identical cylindrical 100g masses
* A string
* A metre rule
* Knife edge
* Two pieces of thread.
* 250 ml empty measuring cylinder
* Water 100ml.

**Procedure**

1. Determine the volume V, of one of the masses by using the apparatus provided. Record the volume, V.

V =……………………………………….................. (1mark)

Explain how you have determined the volume, V. (2marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

i) Determine the Centre of gravity of the metre rule

 Centre of gravity =…………………………………… cm (1/2mark)

 (ii) Arrange the apparatus as shown in diagram 1 below. Show that the metre rule is at equilibrium, starting with X = 100mm.

****

Measure and record the length, Y.

Y…………………………………………………Cm(1/2mark)

1. Repeat procedure a (ii) with the following values of X and fill table 1 below.

Table 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X (mm) | 100 | 150 | 200 | 250 | 300 | 350 |
| Y(mm) |  |  |  |  |  |  |

 (3marks)

1. On the grid provided, plot a graph of Y(cm) (y-axis) against X(cm). (7marks)
2. Determine the gradient, N, of the graph. (2marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………iii) The gradient, N, given by the equations N = F/W, where F is the apparent weight of the mass in the salt solution and W is the actual weight of the mass. Calculate the value F and the up thrust, U.

F=…………………………………………………………………………… (1mark)

U=…………………………………………………………………………… (1mark)

 ……………………………………………………………………………

iv) Hence determine the density, rho (p) of the salt solution.(2marks

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**QUESTION 2**

You have been provided with the following apparatus

* + Resistor
	+ Cell size D new
	+ Cell holder
	+ Two resistor wires mounted on mm scales, marked W and X.

a) Proceed as follows.

 i) Measure and record the diameter of wire W

 D =......................................................................................... mm(1mark)

1. Use the information to calculate the cross-sectional area of the wire. (A)

 A =......................................................................................... m² (2marks)

ii) Set up the apparatus as shown in the diagram 2 below.

Diagram 2



 iv) Move the crocodile clip along W such that the length l = 10cm, then move the jockey to obtain a balance point along the wire X. Record the length L the value of the balance point along wire X.

b) Repeat steps (iii) for values of l = 20cm, 30, 40, 50, 70 and 80cm and complete the table 2.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *l* (cm) | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 70.0 | 80.0 |
| L (cm) |  |  |  |  |  |  |  |
|  |   |  |  |  |  |  |  |

 (6 marks)



c) In the graph provided below plot a graph of *l* (cm) against (5 marks)

d) From the graph find the slope S of your graph. (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….

e) From the graph state the value of when *l* (cm)= 0 (1 mark)

……………………………………………………………………………………………………………………….…………………………………………………………………………………….………………………………………………………………………………………………………

f) Given that l find the value of J when R = 10 ohms. (2 marks)

 ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

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