**MOKASA EXAMINATION**

**Kenya Certificate to Secondary Education**

**PHYSICS PAPER 3**

**Marking Scheme**

**Question 1**

1. (a) The diameter of the resistance wire using a micrometer screw gauge.

**0.3**

 d ……………………………………………………………………………….mm (1/2 mark)

**0.0003**

 d ………………………………………………………………………………m (1/2 mark)

 (7 marks)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Length, L. (cm) | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 |
| Voltmeter, V(V) | **0.80** | **1.25** | **1.55** | **1.75** | **1.90** | **2.00** |
| $\frac{1}{L}$ (m-1) | **10** | **5** | **3.333** | **2.5** | **2** | **1.667** |
| $\frac{1}{V}$ (V-1) | **1.25** | **0.8** | **0.6452** | **0.5714** | **0.5263** | **0.5** |

 (e) Plot a graph of$ \frac{1}{V}$ (y-axis) against $\frac{1}{L}$ . (5 marks)

**Axis 1mark**

**Scale 1 mark**

**Plotting 2 Marks**

**Line 1 Mark**

(f) Determine the slope, **S** of the graph (3 marks)

**= 0.09426** $^{m}/\_{v}$

$$Type equation here.$$

(g) Given that the y-intercept **C** = $\frac{1}{E}$ , find the value of **E**. (2 marks)

**Slope = 0.33/v**

**E = 3.03V**

 (h) Given that slope **S** is given by S = $\frac{πd^{2}}{βE}$ find the value of **β** (2 marks)

**= 1.0e-6**

**Question 2**

2. (n) Complete the table for values of sin (900 – x) and cos y. (8 marks)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X(0) | 15 | 25 | 30 | 40 | 50 | 60 |
| Y(0) | **51** | **52.5** | **54.5** | **61** | **64** | **69** |
| Sin(90 – x) | **0.9659** | **0.9063** | **0.866** | **0.766** | **0.6428** | **0.5** |
| Cos y | **0.6293** | **0.6088** | **0.5807** | **0.4848** | **0.4384** | **0.3584** |

 (o) Plot a graph of cos y (y-axis) against sin (900 – x). (5 marks)

**Axis 1mark**

**Scale 1 mark**

**Plotting 2 Marks**

**Line 1 Mark**

 (p) Find the slope, **S**, of the graph. (3 marks)

**= 0.6666**

(q) Given that, t cos y = sin(900 – x), where t is a constant, use your graph to find the value of t. (2 marks)

**= 1.5**

(r) Identify the significance of constant, t (1 mark)

**= Refractive index if the glass block**

**NB: Hand in the trace-out together with your question paper** (1 mark)