**NAME……………………………………………………….. INDEX NO……………/….…**

**SCHOOL……………………………………………………. DATE …………………………...**

**CANDIDATE’S SIGNATURE……………………………..**

**232/3**

**PHYSICS**

**Paper 3**

**(PRACTICAL)**

**Time: 2 ½ Hours**

## INSTRUCTIONS TO CANDIDATES

1. Write your **name**, and **Index Number** in the spaces provided above.

2. **Sign** and **write** the date of examination in the spaces provided above.

3. This paper consists of two sections: **A** and **B**

4. Answer **all** the questions in section **A** and **B** in the spaces provided.

6. All working **must** be clearly shown

7. **Mathematical tables** and **silent electronic calculators** may be used.

**FOR EXAMINER’S USE ONLY**

|  |  |  |
| --- | --- | --- |
| **Question** | **Maximum Score** | **Candidate’s Score** |
| **1** |  |  |
| **2** |  |  |
| **TOTAL** |  |  |

***This paper consists of 8 printed pages.***

***Candidates should check the question paper to ensure that all***

 ***pages are printed as indicated and no questions are missing.***

**PART I**

1. **You are provided with the following apparatus**

a metre rule

a lens holder

a concave lens

a candle, and

a mounted white screen.



 **Proceed as follows:**

i Set up the apparatus as shown in figure 2 above. (ensure that the candle and the lens are in the line)

 ii) With the candle placed a distance L =100cm from the screen ,determine the position of a sharply focused magnified image of the candle on the screen by moving the lens

 iii) Determine the distance of the lens from the candle U1

  **U1………………………. .cm**  (l mk)

 iv) Now move the lens towards the screen until you get a sharply focused diminished image. Determine the new distance of the lens from the candle U2

 **U2………………………cm**  (l mk)

 v) Calculate the displacement d of the lens (l mk)

  **d = U2 — U1 = …………………….cm**

 Give that *f =*![](data:application/x-msmetafile;base64...) *,* calculate the value of f. (2 mks)

 **PART II**

1. **You have been provided with the following apparatus**

 — A wooden plank

 — A stop watch

 — Optical pin

 — Retort stand

 — Wooden pegs

 (a) **Proceed as follows**.

 i) Set the apparatus as shown in the fig below with the optical pin being at the

position A which is 4 cm from the centre of gravity of the wooden plank. (Marked G)



 ii) Displace the strip through an angle of about 15° from its rest position and

 release it to swing to and fro (oscillate). Measure the time t for 10

 oscillations of the wooden plank. Record your observations.

 b) Repeat steps (ii) with the pin through the holes B, C, D and E of lengths L =6 cm, 8cm,

10cm and 12cm repective1y from the centre of gravity of the wooden plank marked G and tabulate your results in table. (5 mks)

 (ii)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Hole | A | B | C | D | E |
| Distance L(m) | 0.04 | 0.06 | 0.08 | 0.10 | 0.12 |
| Time for 10 osc |  |  |  |  |  |
| Period time T sec |  |  |  |  |  |
| T2 sec2 |  |  |  |  |  |
| L2 (m2) |  |  |  |  |  |
| L2 × 10-4 (m2) |  |  |  |  |  |

![](data:application/x-msmetafile;base64...) c). Plot a graph of T2 sec2 against L2 (m2) (4 mks)

 d). Determine the value of the slope S of your graph. (2 mks)

e). The equation of the line is represented by ![](data:application/x-msmetafile;base64...)

 i. Find the value of the constant R given ![](data:application/x-msmetafile;base64...)= 3.142. (2mks)

 ii. Find the value of the intercept C of your graph and hence find the value of K.

![](data:application/x-msmetafile;base64...) (2mks)

2. **You have been provided with the following apparatus.**

 — Resistor R

 — Cell size D new

 — Cell holder

 — Two potentiometers marked W and X.

 a) **Proceed as follows.**

 (i) Measure and record the diameter of wire W

  **D = m2 (1 mark)**

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

 **A = m2 (2 mks)**

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



 (iv) Move the crocodile clip along W such that the length e =10cm, then move the

jockey to obtain a balance point along the wire X. Record the length L and the value of the balance point along wire X.

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

(6mks)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| e cm | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 70.0 | 80.0 |
| L cm |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

c) Plot a graph of e cm against ![](data:application/x-msmetafile;base64...) (5mks)

![](data:application/x-msmetafile;base64...)

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

 **S=**

e) From the graph state the value of ![](data:application/x-msmetafile;base64...)When e = 0 (l mk)

f) Given that ![](data:application/x-msmetafile;base64...)find the value of J when R=![](data:application/x-msmetafile;base64...) (2mks)

**END**