**NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INDEX NO. \_\_\_\_\_\_\_\_\_\_\_ CANDIDATE SIGNATURE \_\_\_\_\_\_\_\_\_\_\_\_DATE \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



[**TEACHER.CO.KE SERIES 29**](https://teacher.co.ke/notes/)

**232/3**

**PHYSICS**

**PAPER 3**

**(PRACTICAL)**

**2 ½ HOURS**

**INSTRUCTIONS TO CANDIDATES**

(a) Write your name and index numbers in the spaces provided above.

(b) Answer ALL the questions in the spaces provided in the question paper

(c) You are supposed to spend the first 15 minutes of the 2 ½ hours allowed for this paper reading the

 whole paper carefully before commencing your work.

(d) Marks are given for a clear record of the observations actually made, their suitability, accuracy and

 the use made of them

(e) Candidates are adviced to record their observations as soon as they are made

(f) Mathematical tables and electronic calculators may be used

(g) This paper consists of printed pages

 **Question 1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | a | c | e | f | g | h | Total  |
| Maximum score | 2 | 1 | 7 | 5 | 3 | 2 | 20 |
| Candidates score |  |  |  |  |  |  |  |

 **Question 2**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | d | g | h | i | j | k | l | Total |
| Maximum score | 1 | 7 | 5 | 3 | 2 | 1 | 1 | 20 |
| Candidates score |  |  |  |  |  |  |  |  |

|  |
| --- |
|  |

 **Grand Total**

**Turn Over**

1. You are provided with the following

 A 50g mass

 Stand and clamp

 G – clamp

 Thread

 Half metre rule

 A metre rule with a pointer fixed at one end

 Vernier callipers

 Proceed as follows

 (a) Using the vernier callipers provided measure the width w and thickness h of the metre rule

 w \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm (1mk)

h \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm (1mk)

 (b) Clamp the metre rule at the edge of the bench at 20cm mark using the G-clamp. The metre

 rule will remain fixed in this position through out the experiment.

 (c) Support the half metre rule vertically as shown and record the pointer reading y when the

 metre rule is not loaded (the position of half metre rule should remain the same through

 out the experiment)

Pointers reading y = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_cm (1mk)

 G-clamp Bench Metre rule X 50g mass Half metre rule L

 (d) Using the thread provided, hang the 50g mass at a distance x = 10cm. The distance L is now

 70cm. Record the pointer reading in table 1.

 (e) By varying the position of the 50g mass for values of L = 60cm, 50cm, 40cm, 30cm, 20cm,

 and 10cm record corresponding pointer readings.

 Complete table

2.

|  |  |  |  |
| --- | --- | --- | --- |
| Distance L (cm) | Pointer reading a (cm) | Depression d= a-y (cm) | K = 50 d g/cm |
| 70 |  |  |  |
| 60 |  |  |  |
| 50 |  |  |  |
| 40 |  |  |  |
| 30 |  |  |  |
| 20 |  |  |  |
| 10 |  |  |  |

 (7mks)

 (f) Plot a graph of K (y axis) against L (5mks)

 (g) Determine the slope s of the graph at L = 30cm (3mks)

 (h) Determine the constant q, given that

 Q = AS + K1 where A is the cross-sectional area of the metre rule, S and K1 are the slope

 and value of k at L = 30cm respectively (2mks)

3. 4.

2. You are provided with the following

 - Candle

 - Plane mirror

 - Metre rule

 - Lens

 - Lens holder

 - A cardboard with cross wire at its centre

 - Screen

 Proceed as follows

 a) Attach the plane mirror to the lens using cello tape

 b) Set up the apparatus as shown below

 lens Plane mirror Metre rule d x

 Ensure that the candle plane is at the same height as the cross wires.

 (c) Place the cardboard with cross wire at the 0cm mark

 (d) Move the lens along the metre rule until a sharp image of the crosswire is formed alongside

 the object cross wire

Measure the length d

d = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1mk)

 Now set up the apparatus as shown below

 x u v

 (e) Set U = 20cm and adjust the screen until a clear image of the cross wire appears on the

 screen. Measure the value of V and record in the table

 (f) Repeat the procedure (e) above for other values of U and complete the table below

5.

(g)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| U (cm) | 25 | 30 | 35 | 40 | 50 |
| V (cm) |  |  |  |  |  |
| M = v/m |  |  |  |  |  |

 (7mks)

 (h) Plot a graph of m against v (5mks)

 (i) Determine the slope s of the graph (3mks)

 (j) Given that the equation of the graph is given by

 M = V -1 where n is a constant, determine the value of n

 n (2mks)

 (k) Find n1 the value of v when m = o (1mk)

 (i) What physical quantity does n represent (1mk)