

Signature _____ Date _____

232/3
PHYSICS
PAPER 3
PRACTICAL
JULY/AUGUST 2009
2
½ HOURS

THE BARINGO - KOIBATEX DISTRICT
EDUCATIONAL IMPROVEMENT EXAMINATIONS

Kenya Certificate of secondary Education
232/3
Physics
Paper 3
Practical
July/August – 2009
2 ½ hours

1. You are provided with the following
 - a metre rule
 - A knife edge (wedge
 - A mass A (flat bottomed 50 g mass)

Proceed as follows:

- (a) Determine the centre of gravity (c.o.g) of the metre rule

c.o.g = ----- cm mark (1 mk)

- (b) Place the mass A at the 95 cm mark of the metre rule, then balance it on the knife edge as shown below

(c) When balanced note the position of the knife edge and hence find P and Q.

Record P and Q in the table below

(d) Repeat the procedure above and complete the table below (7 mks)

Position of A in cm mark	95.0	90.0	85.0	80.0	75.0	70.0	65.0
P.(cm)							
Q (cm)							

(e) (i) Plot a graph of P (y – axis) against Q

(5 mks)

(ii) Determine the slope of your graph

(2 marks)

$$P = \frac{MQ}{R} + K,$$

(f) Given that $\frac{MQ}{R}$ is the equation of the graph. Where M is the mass of A and R is the mass of the metre rule, determine;

(i) K, what does this value represent?

(2 marks)

(ii) The mass of the metre rule R in grams

(3 marks)

2. A. You are provided with the following,

- 2 new dry cells
- A cell holder
- A switch
- An ammeter
- A voltmeter
- 6 connecting wires
- A wire AB mounted on a mm scale
- A micrometer screw gauge (to be shared)

Proceed as follows

(a) Connect the circuit as shown in the diagram below

(b) (i) Measure the voltage E_0 before closing the switch

$E_0 =$ ----- volts ($\frac{1}{2}$ mk)

(ii) Close the switch and record the ammeter reading, I_0 , when $L = 0$

$I_0 =$ ----- Amperes ($\frac{1}{2}$) mk

(c) Adjust the length L to 0.2m, close the switch, read and record the value of the current

(1) in the table below

(d) Repeat the procedure in (c) above for other values of L given and complete the table below for values of I (3 mks)

(d) Complete the table for $\frac{1}{L}$ (1 mk)

Length L (m)	0.3	0.3	0.4	0.5	0.6	0.7
Current I, (A)						
$\frac{1}{L}$ (m ⁻¹)						

(e) On the grid provided plot a graph of I against $\frac{1}{L}$ (- axis) (4 mks)

L

(f) Determine the slope S of your graph (2 mks)

(g) Measure the diameter (d) of the wire

d = -----m (1 mk)

(i) determine the cross sectional area A, of the wire in m² (1 mark)

(ii) Find R_0 given that $R_0 = \frac{E_0}{l_0}$ (1 mark)

(ii) Find K , given that $K = \frac{25A}{R_s} \times S$ (2 marks)

B. You are provided with the following

- a candle
- a metre rule
- a white screen
- a lens L , mounted on a lens holder
- A match box

Proceed as follows,

(a) Arrange the lit candle, the lens and the screen as shown below such that $S = 50$ cm

(b) Starting with the lens very close to the object (candle) move, the lens until a sharp clear image of the object is formed on the screen. Measure the distance, x between the lens and the screen

$x =$ -----cm (½ mark)

(c) Without changing the position of the object and the screen, move the lens closer to the screen until the object is formed on the screen. Measure the distance x , between the lens and the screen

$y =$ ----- cm (½ mark)

(d) Determine the value of d given that $d = x - y$ (1 mark)

(e) Given that $f = \frac{S^2 - d^2}{4S}$, determine the focal length f , of the lens (2 marks)