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232/3 PHYSICS (PRACTICAL) PAPER 3

Time: 2 1/2 hours

# February series examination-2016 Kenya Certificate of Secondary Education INSTRUCTIONS TO CANDIDATES:

- 1. Write your name, index number and school in the spaces provided above.
- 2. Sign and Write the date of examination in the spaces provided above.
- 3. This paper consists of two questions
- 4. All answers and working must be written on the question paper in the spaces provided below each question.
- 5. Non-programmable silent electronic calculators and **KNEC** Mathematical tables may be used unless stated otherwise

# **FOR EXAMINER'S USE ONLY:**

Question	Maximum score	Candidates' score
Q1	20	5 3500
Q2	20	27,000
Total score	40	55 <del>(2000)                                  </del>

This paper consists of 8 printed pages. Candidates should check the question paper to Ensure that all the pages are printed as indicated and no questions are missing.

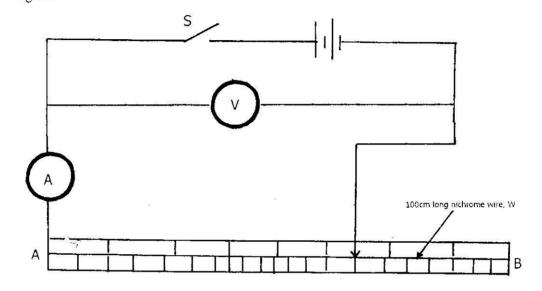
### **Ouestion One**

You are provided with the following:

- Two cells of 1.5V each
- Nichrome wire labeled W mounted on a metre rule
- An ammeter (0-2.5A)
- A cell holder
- Voltmeter 0 5v
- 8 connecting wires at least 4 with crocodile clips (or a jockey)
- A metre rule

### Proceed as follows:

(a) Connect the circuit as shown in the figure 1 below. Figure 1



(b) (i) Connect the end of A and point B when AB = 100cm across the terminals as shown in the figure 1 above.

Close the switch and measure both current I and p.d, V across the wire AB

Close the switch and measure both	current rand p.a., v across an	ic witchib
Current I A		(1mk)
P.d, V		(1mk)
Measure the emf of the cell, E =	V	(1mk)

- (c) Reduce the length AB as shown, 100cm, 70cm, 60cm, 50cm, 40cm, 30cm and 20cm. In each case record the current (I) and the corresponding values of p.d (V)
- (d) Enter the length as shown in the table 1 below:

Table 1

Length AB (cm)	100	70	60	50	40	30	20
Current I (A)			78 H.S. V. S. V.			İ	
p.d (V)					ļ.		
E - V(V)	i i			2			

(e) Complete the table
(i) Plot a graph of (E – V) against I (A) (5mks)

(ii)

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N	INDEX NOCLASSSIGN	NAME.
(3mks)	i) Determine the gradient of the graph	(
		,
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		9
(2mks)	ii) Given the equation, $E = V + Ir$ , determine the internal resistance of each cell	(
	**************************************	

# **Question Two**

# Part A

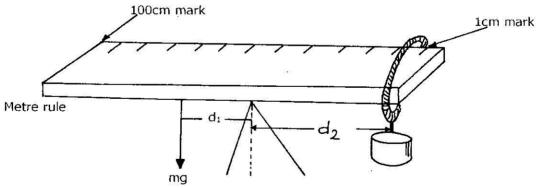
You are provided with the following apparatus

- A wooden metre rule
- 10cm long cotton thread
- Masses, two of 10g and two of 20g
- Knife edge 20cm high

# Proceed as follows

- (a) Arrange the apparatus a shown in figure 2 below
- (b) Balance the metre rule on the knife edge and adjust the metre rule until it balances horizontally when there is no mass on it. The knife edge is now at the position of centre of gravity (cog)
- (c) Record the position of (cog) Position of c.o.g = \_\_\_\_\_ cm (1mk)

Figure 2



- Now hang a mass on the metre rule by use of the thread at 1cm mark. Adjust the knife edge until the metre rule balances again at new mark. Record the length d<sub>1</sub> and the corresponding length d<sub>2</sub>.
  - (i) Repeat the procedure for different masses and complete the table 2 shown below.

		Table 2	2			
Mass, m(g)	10	20	30	40	50	60
Distance d <sub>1</sub> (cm)						
Distance d <sub>2</sub> (cm)						
Mass (m) x distance d <sub>2</sub> = md <sub>2</sub>						0.98300

(7mks)

(ii) Plot a graph of md<sub>2</sub> against d<sub>1</sub>

(5mks)

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NAME		IND	EX NO	CLASS	SIGN
(i	ii)	Calculate the slope s of the graph			(2mks)
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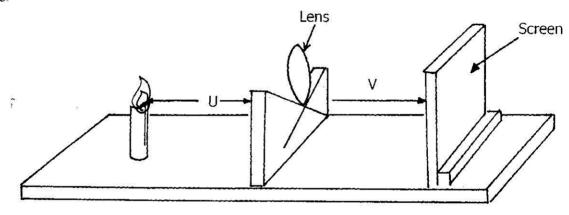
# Part B

You are provided with the following apparatus

- A lens
- A lens holder
- A candle
- A white screen
- A metre rule

# Procedure

- (f) Set up the apparatus a shown in the figure 3 below:
- (g)



- (g) Starting with u = 30cm adjust the position of the screen to obtain a sharp image of the candle. record value of V in the table shown below:
- (h) (i) Repeat the procedure above for u = 20cm and complete table below:

Table 3

u em	v cm	$\mathbf{M} = \mathbf{v}_{\mu}$
20		7 11
30	2-12 13 13	

(2mks)

(ii)	Given that the focal length of the lens satisfies the equation, $f = \frac{v}{1+m}$	determine the
	average value of the focal length	(3mks)
• • • • • • • • • • • • • • • • • • • •		
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