NAME: ..... INDEX NO: .....

SCHOOL: .....

THE BURAMU TWO JOINT EXAMINATIONS

MAY/JUNE 2016

232/3

PHYSICS

PAPER 3

PRACTICAL

$2\frac{1}{2}$ hours

INSTRUCTIONS

- Answer ALL the questions in the spaces provided in the question paper.
- You are supposed to spend the first 15 minutes of the $2\frac{1}{4}$ hours allowed for this paper reading the whole paper carefully before commencing your work.
- Marks are given for clear record of the observations actually made for their suitability and accuracy and the use made of them
- Candidates are advised to record their observations as soon as they are made.
- Mathematics table and electronic calculators may be used.

For Examiners Use only

Question 1	a	b	c(i)	(ii)	(iii)	(iv)	(v)
Maximum score							
Candidate's score							

Total

Total

Question 2	a	b	c	d	Part B	
					c	d
Maximum Score						
Candidate's score						

Total Score.

Question 1

You are provided with the following:

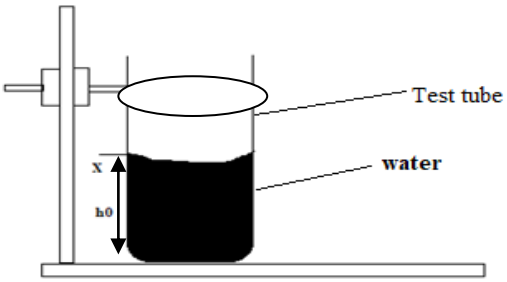
- Six steel balls
- Test tube
- Vernier callipers (can be shared)
- Micrometre screw gauge (can be shared)
- Water in a Beaker (at least 200ml)
- Retort stand and clamp
- A 15 cm ruler or 30cm ruler
- A beam balance (to be shared) (electronic)

Proceed as follows:

a) i) Measure the diameter of the steel ball, using a micrometre screw gauge.
The diameter of the steel ball (1mk)
d= .....
ii) Measure the mass of one steel ball. (1mk)
m= .....
iii) Find p, if $p = \left[\frac{m}{0.5238 1 d^3} \right]$ (2mks)

b) Measure the internal diameter of the test tube using vernier callipers. The internal diameter of the test tube.
D= .....cm (1mk)

c) Clamp an empty test tube vertically as shown in the figure 1 below. The test tube should be in this position throughout the experiment.



Add water to the test- tube to half way full at point X as shown in figure 1 above.

i) Measure the vertical height h from the bench to the level of water at point x
ho= .....cm
Add one steel ball to the test tube and note the new vertical height and increase in height H. Add the other steel balls, each time recording the new vertical height from the bench and corresponding increase in height.

ii) Hence fill the table below: (4mks)

No of steel balls added	1	2	3	4	5	6
Mass added m(g)						
Vertical height from bench h (cm)						
Increase in height H= ($h- h_0$)						

iii) Plot a graph of mass m, against increase in water height H. (5mks)

iv) Find the slope S of the graph (3mks)

v) Calculate T, (2mks)

$$T = \left(\frac{1}{D^2 \times 0.785} \right)$$

QUESTION 2

Part A

1. You are provided with the following :-
   - One resistance wire labelled P
   - Two dry cells
   - Switch K
   - A voltmeter (Range O- 3v or O- 5v)
   - Three connecting wires with crocodile clips
   - A metre rule
   - 3 connecting wires

   a) Set up the apparatus as shown in the diagram below.

Take off the crocodile clip from the wire AB and close the switch K. Record the reading E of the voltmeter.
E: ..... (1mk)

b) Keeping the crocodile clip attached to the wire AB at a distance L= 10 cm from A record the reading V of the voltmeter in the table below. Repeat for the values of L shown in the table. (6mks)
Complete the table.

Length (L)	Voltage (v)	(E-V)	$\frac{V}{E-V}$
10			
20			
30			
40			
50			
60			

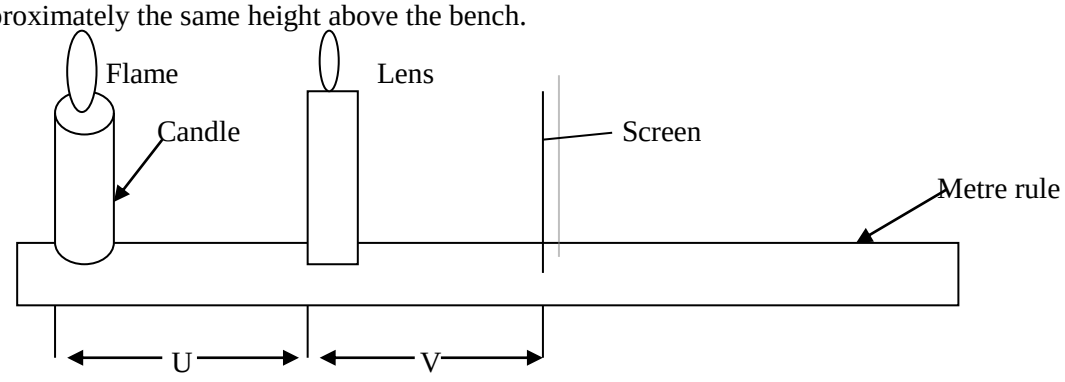
c) Plot a graph of $\left[\frac{V}{E-V}\right]$ against L (5mks)

d) Determine the slope S, of the graph. (3mks)

PART B

1. You are provided with the following:
   - Candle(s)
   - A lens and a lens holder
   - A screen
   - A metre rule

a) Set up the apparatus shown in the figure below. Ensure that the candle flame and the lens are approximately the same height above the bench.



b) Set the position of the lens so that it is 0.3m from the candle (U= 0.3). Adjust the position of the screen until a sharp image of the candle flame is obtained. Measure the distance V between the lens and the screen. Record the value of V in the table below.

c) Repeat the procedures in (b) above for the other values of U in the table. (3mks)

U(m)	0.30	0.35	0.40
V(m)			
M= $\frac{V}{U}$			

Given that P= $\frac{V}{M+1}$ Use the results in the table above to determine the average value of P. (2mks)

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