Name……. Index No……

232/3
PHYSICS
PAPER 3
(Practical)
July/August – 2009
Time: 2 Hours

INTERZONAL
Kenya Certificate of secondary Education
Physics
Paper 3
July/August – 2009
Time 2 Hours

Question one
For this question each candidate is required to have the following apparatus (teacher to attach a graph [paper strip)

- One dry cell 1.5V
- One bulb 1.5V
- Voltmeter (0 -2.5v or 0.5v)
- Ammeter (0.2.5A or 0-1A
- 10 connecting wires one with a crocodile clip
- Nichrome wire 1M mounted on a scale
- Cell holder
- Bulb holder

Questions two

- Boiling tube (teacher to attach a graph paper strip) graduated in cm
- Two 250 measuring cylinders
- Sand about 300grams
- Water – 250ml
- Glylerine – 250 ml
- A spatula
- A piece of tissue paper
- Celloptape to attach graph paper strip on boiling tube
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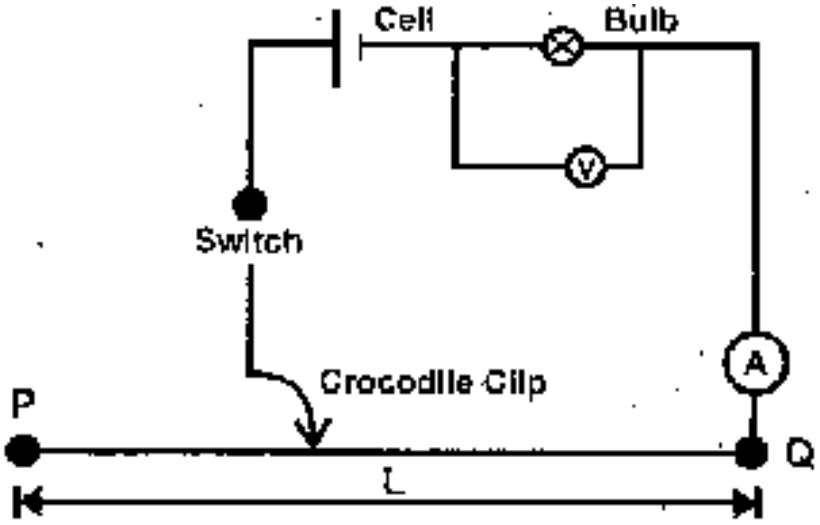
NOTE: **Cellotape should cover the graph paper strip to prevent it from getting wet**

1. You are provided with following

- one dry cell
- bulb
- Voltmeter
- Ammeter
- 10 connecting wires, one with a crocodile clip
- Nichrome wire
- Micrometer screw gauge
- Cell holder
- Bulb holder

(a) (i) Set up the circuit as shown below in the diagram



(ii) With the crocodile clips at P (ie L = 100cm) take the voltmeter reading (V0 and the ammeter reading. Record V and I. repeat for L = 80, 60, 40, 20 and 0 cm respectively.

Length	100	80	60	40	20	0
Voltage V (volts)						
Current (A)						

(iii) Plot a graph of the voltmeter reading (y- axis) against the ammeter reading.
(5 mks)

(iv) What physical quantity is represented by the slope of the graph at any given point?
(1 mk)

(v) Use your graph to describe how the physical quantity in (iv) above is affected as the temperature increases (2mks)

(b) (i) Given the apparatus in (a) above draw a diagram of circuit you would use to determine the current though the resistance wire and potential difference across it. (2 mks)

(ii) Set up the circuit you have drawn and record the ammeter reading 1 and the voltmeter reading V, when L = 100cm

(ii) Using a micrometer screw, measure the diameter d of the wire. Note also the full length L of the resistance wire.

D= ……..mm
L= …….. cm

(iv) Calculate the quantity $p = 0.785 (^{V}/_{I}) (d^2/L)$ and give the units (2 mks)

2. You are provide with the following apparatus
- Boiling tube with a thin strip of graph paper graduated in centimeters
- Two 250ml measuring cylinders labeled A and B
- Sand
- Water – approximately 250ml
- Liquid L
- A spatula
- Tissue paper
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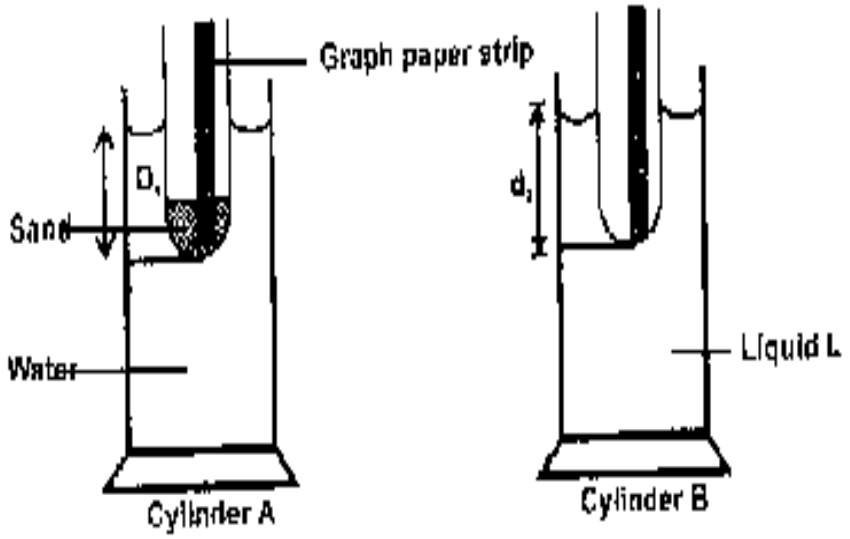
Proceed as follows

(a) Half fill cylinder A with water and B with liquid L
(b) Insert the boiling tube into cylinder A
(c) Put some san carefully till the tube floats to a depth of 7cm as shown below



Record this depth as d_1

(d) Remove the tube from the cylinder A, wipe it and then float it in cylinder B
Record the depth to which it flows as d_2
(e) Wipe the tube and repeat the above process adding more sand to float the tube upright so that d, takes other values shown in table 1

Depth in cylinder Ad_1(cm)	7.0	7.5	8.0	8.5	9.0	9.5	10.0
Depth in cylinder Bd_2							

Table 1 (7 mks)

(f) Plot a graph of d_1 (y – axis) against d_2 (5 mks)

(g) Determine the slope D of the graph (5 mks)

(h) What does S represent? (1mk)

(i) From the graph determine R_L the value for d_1 when $d_2 = 0$ (1 mk)
(the graph paper is provided)

(j) Determine the constant given that:
$d_1 = d_2 / r + R$ (3 mks)