535/3
PHYSICS PRACTICAL
PAPER 3
2¼ HOURS

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PAPER 3

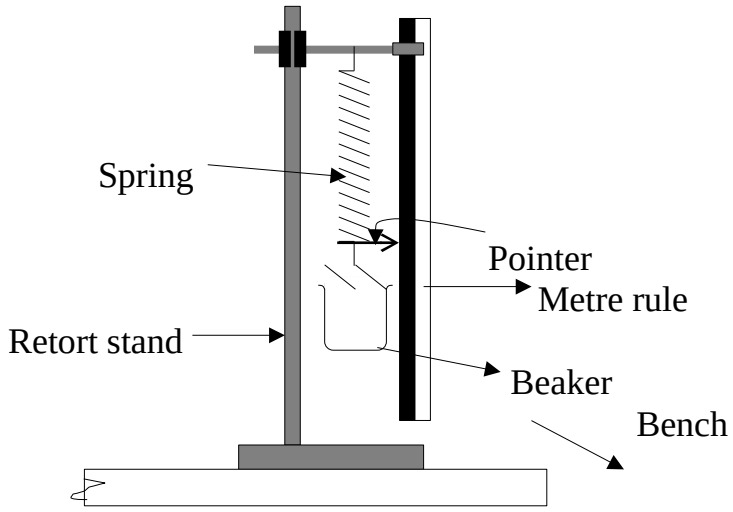
2 Hours 15 Minutes

INSTRUCTIONS

- *Answer **question 1** and **one** other question*
- *Candidates are not allowed to use the apparatus or write for the first 15 minutes.*
- *Graph papers are provided.*
- *Marks are given mainly for clear record of the observations actually made, for their suitability and accuracy, and for the use made of them.*
- *Mathematical tables and non-programmable scientific electronic calculators may be used.*
- *Write on one side of the paper only.*
- *Candidates are expected to record on their scripts all their observations as these observations are made and to plan the presentation of these records so that it is not necessary to make a fair copy of them. The working of the answers is to be handed in.*

1. **In this experiment you will determine the relative density of liquid X**

(a) Clamp the spring provided vertically and suspend the beaker from it as shown in Fig. 1.



(b) Record the initial position of the pointer (P_0) on the meter rule.

(c) Pour 50 cm^3 of water into the beaker and record the new position of the pointer P_1 on the metre rule.

(d) Find the extension, $\boldsymbol{x} = (P_1 - P_0)$.

(e) Repeat procedure (c) and (d) for four more readings by adding 50 cm^3 of water each time

(f) Pour out the water and dry the beaker with a piece of paper provided.

(g) Repeat procedure (a) to (e) using liquid (X) and call the extension produced, ***y***.

(h) Record your results in two suitable tables.

(i) Plot a graph of ***y*** (**along the vertical axis**) against ***x*** (**along the horizontal axis**).

(j) Determine the slope **S** of the graph.

2. **In this experiment you will determine the refractive index, n, of the material of glass block provided.**

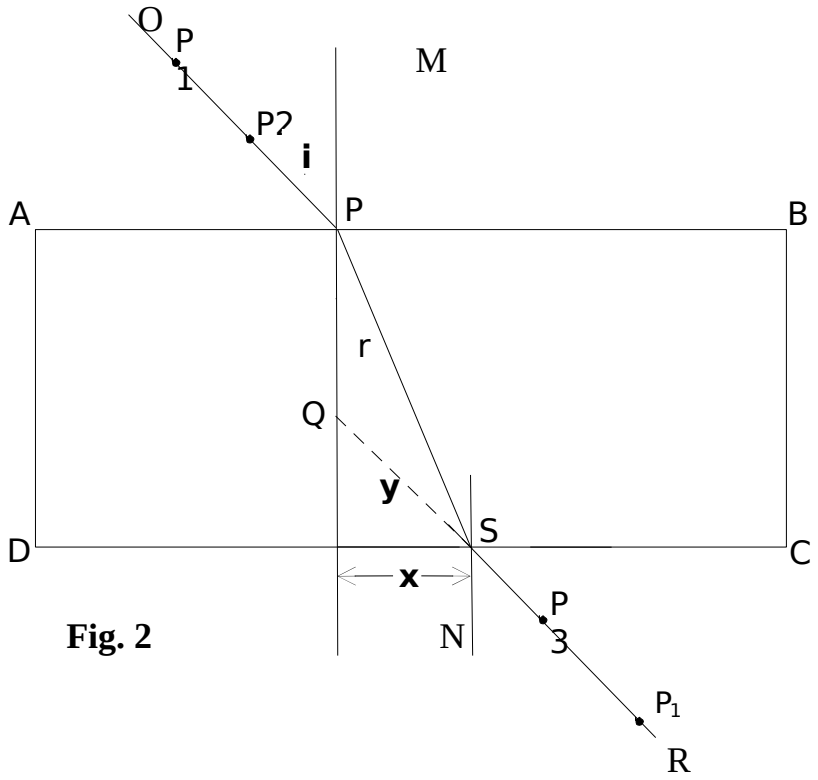


Fig. 2

a) Fix the plane sheet of paper on a soft board using drawing pins.

b) Place the glass block on the sheet of paper so that it rests on its broader face and trace its outline ABCD.

c) Remove the glass block.

d) At point P about 2 cm from A, draw a normal MN.

e) Draw a line OP such that angle, $\boldsymbol{i} = 30^0$.

f) Fix pins P_1 and P_2 along OP and then replace the glass block on its outline.

g) Looking through side DC, fix pins P_3 and P_4 such that they appear to be in a straight line with the images of $P_1$and P_2 as shown in figure 2.

h) Remove the pins and the glass block and draw a line through P_3 and P_4 to meet DC at S.

i) Join S to P.

j) Measure and record angle r.

k) Produce RS to meet the normal MN at Q.

l) Measure and record distance, ***x***and y**.**

m) Repeat procedures (e) to *(l*) for ***i*** = 40^0, 50^0 , 60^0 and 70^0.

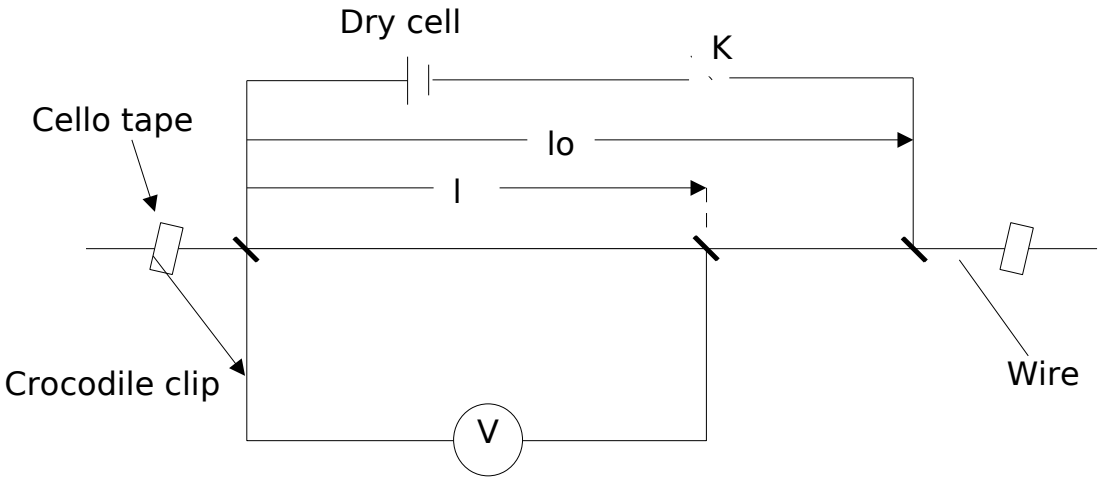
n) Record your results in suitable table including values of $\sin r$ and $\frac{x}{y}$.

o) Plot a graph of $\frac{x}{y}$ (**along vertical axis**) against$\sin r$ (**along horizontal axis**).

p) Find the slope, **n,** of the graph.

3. **In this experiment you will determine the internal resistance of a dry cell.**

a) Connect the circuit shown in the diagram bellow, with l_o = 50.0cm. start with a length l = 10.0cm



b) Close switch **K**.

c) Record the reading, **V**, of voltmeter.

d) Open switch **K**.

e) Repeat procedures (b) to (d) for values of, l = 20.0, 30.0, 40.0 and 50.0 cm.

f) Record your results in a suitable table.

g) Plot a graph of **V** (**along the vertical axis**) against *l* (**along the horizontal axis**).

h) Find the slope, s, of graph.

i) Calculate the internal resistance, r of the cell from the expression:

$$r = 0.042\left(\frac{1.5}{s} - 50\right)$$

END