## PERFECT STEPS PUBLISHERS

END TERM EXAMS 2015

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**Physic Form 3 pp 3**

1. You are provided with the following apparatus
	* Ammeter
	* Two dry cells (1.5 V)
	* A switch
	* 1 m long resistance wire mounted on a scale
	* Five connecting wires with crocodile clips
	* Micrometer screw gauge
2. Measure the diameter, **d**, of the resistance wire. (1 mrk)

d = ………………………………….. m

1. Calculate the cross-section area of the resistance wire, A. (2 mks)
2. Set-up the apparatus as shown below:



1. Set the length of the resistance wire, L=0.1m and record the corresponding current, I. repeat the procedure for other values of length and complete the table below. (8 mks)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Length L (m) | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 |
| $\frac{1}{L}$ (m-1) |  |  |  |  |  |  |  |  |  |
| Current I (A) |  |  |  |  |  |  |  |  |  |

1. (a) Plot the graph of $\frac{1}{L}$ (y axis) against I (5 mks)

(b) Calculate the gradient of the graph (3 mks)

(c) What will be the length of the resistance wire when a current I=0.54A. (1 mrk)

1. You are provided with the following apparatus;
	* A glass block
	* A soft board
	* A plain paper
	* Four optical pins
	* Four thumb pins
	* A protractor
	* A ruler
2. Fix the plain paper on the soft board using the thumb pins
3. Place the glass block on the paper fixed in (a) above
4. Trace the outline of the glass block using a pencil
5. Remove the glass block.

**Mark point X, 2 cm from the edge on one of the longer sides of the traced glass block as shown below**

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1. Construct a normal at x, to emerge through line DC, let this normal meet line DC at M
2. Mark point N along the emergent normal, 5cm from M
3. Construct line NP to meet the normal at N at 900. Line NP can be about 10cm.
4. Construct an incident ray RX at an angle of incidence i=100 and fix two pins P1 and P2 along it.
5. Replace the glass block to the traced figure
6. View the path of the incident ray RX through the glass block using the other two pins P3 and P4
7. Remove the glass block and draw the emergent ray through P3 and P4
8. Measure the distance of the emergent ray from point N along line NP as shown below



1. Record the corresponding values of **d** in the table below
2. Repeat the procedure for other values of i

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Angle of incidence i0 |  |  |  |  |  |  |
| Distance d (cm)  |  |  |  |  |  |  |
| Sin i |  |  |  |  |  |  |
| Sin2i |  |  |  |  |  |  |

 ()

1. (i) Plot the graph of **Sin2i** (y axis) against **d**

(ii) Calculate the gradient of the graph