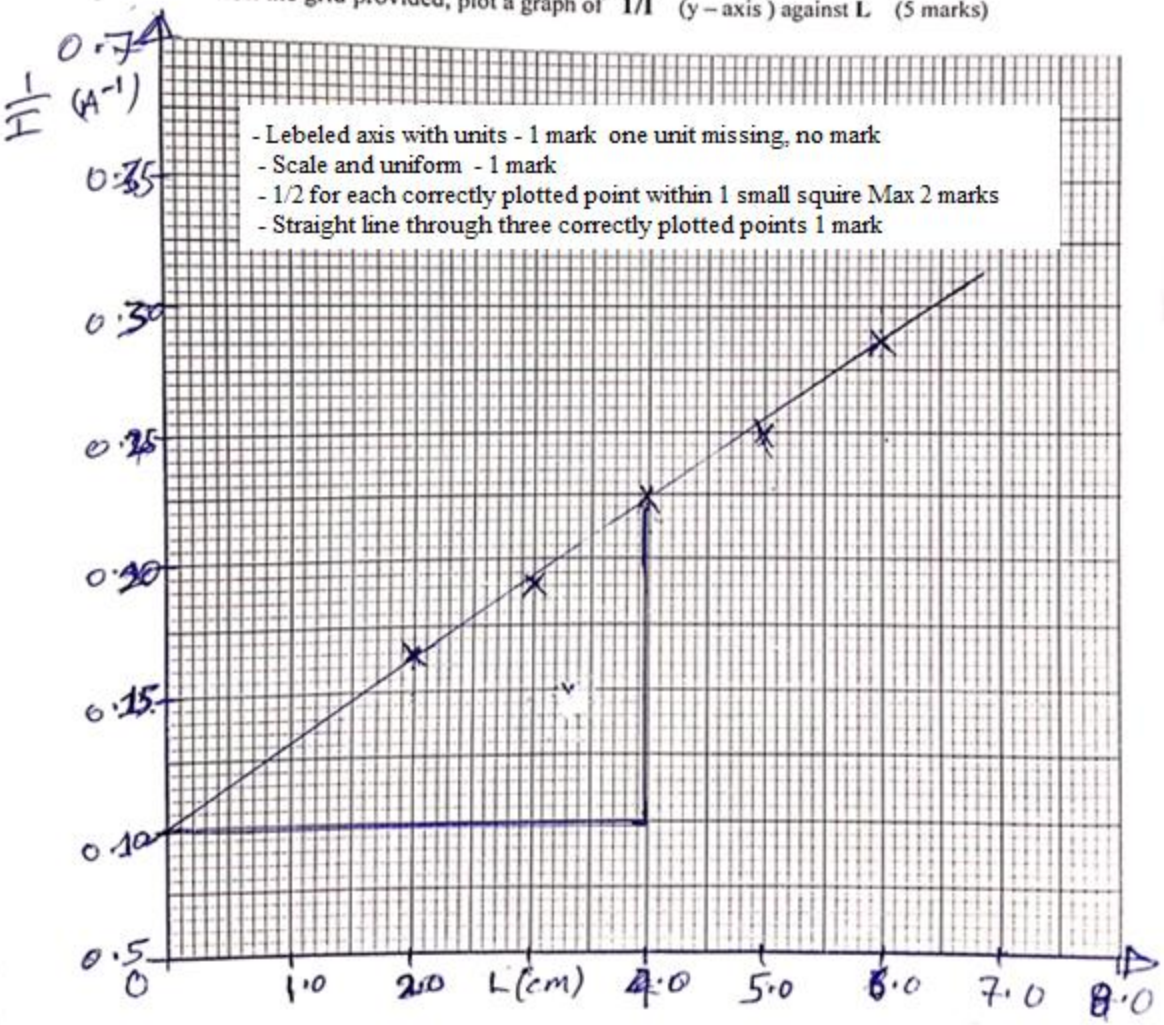
TEACHERS GUIDE – EXP 15

Provide the following apparatus;

- *Two dry cells*
- *A cell holder*
- *A switch*
- *An ammeter*
- *A voltmeter*
- *Six Connecting wires, two with crocodile clips.*
- *Nichrome wire mounted on a meter rule, labeled X*
- *A michrometer screw gauge*

<table>
<tr><th>WORKING</th><th>MARKING POINT</th></tr>
<tr><td>E = 3.0 +/- 0.2</td><td>-1 Mark</td></tr>
<tr><td>d) Allow +/- 0.04 for values of current
<table>
<tr><td>Length (m)</td><td>0.2</td><td>0.3</td><td>0.4</td><td>0.5</td><td>0.6</td><td>0.7</td></tr>
<tr><td>Current (A)</td><td>0.60</td><td>0.52</td><td>0.44</td><td>0.40</td><td>0.35</td><td>0.29</td></tr>
<tr><td>1/I (A^{-1})</td><td>1.67</td><td>1.92</td><td>2.27</td><td>2.50</td><td>2.85</td><td>3.44</td></tr>
</table></td><td>-For current1 mark each, must be within range Max 5 marks 2dp a must
- For 1/I, all correct for 1 mark.</td></tr>
<tr><td>e) On grid attached.</td><td>As per graph 5 mks</td></tr>
<tr><td>f) -Interval (From students' graph)
-Evaluation
- Answer with units. S = (2.5 – 3.5) V/A OR ohms</td><td>1 Mark
1 mark for eval.
1 mark 2 d.p</td></tr>
<tr><td>g) i) - All values of d including averages within (0.32 – 0.42) mm</td><td>1 Mark</td></tr>
<tr><td>ii) – Determination of area</td><td>1 mark</td></tr>
<tr><td>h) i) - implying K/AE = Slope
- determining K</td><td>1 mark
1 mark</td></tr>
<tr><td>ii) determination of Q from Y – intercept and E</td><td>1 mark</td></tr>
<tr><td>TOTAL</td><td>20 MARKS</td></tr>
</table>

On the grid provided, plot a graph of **1/I** (y – axis) against **L** (5 marks)

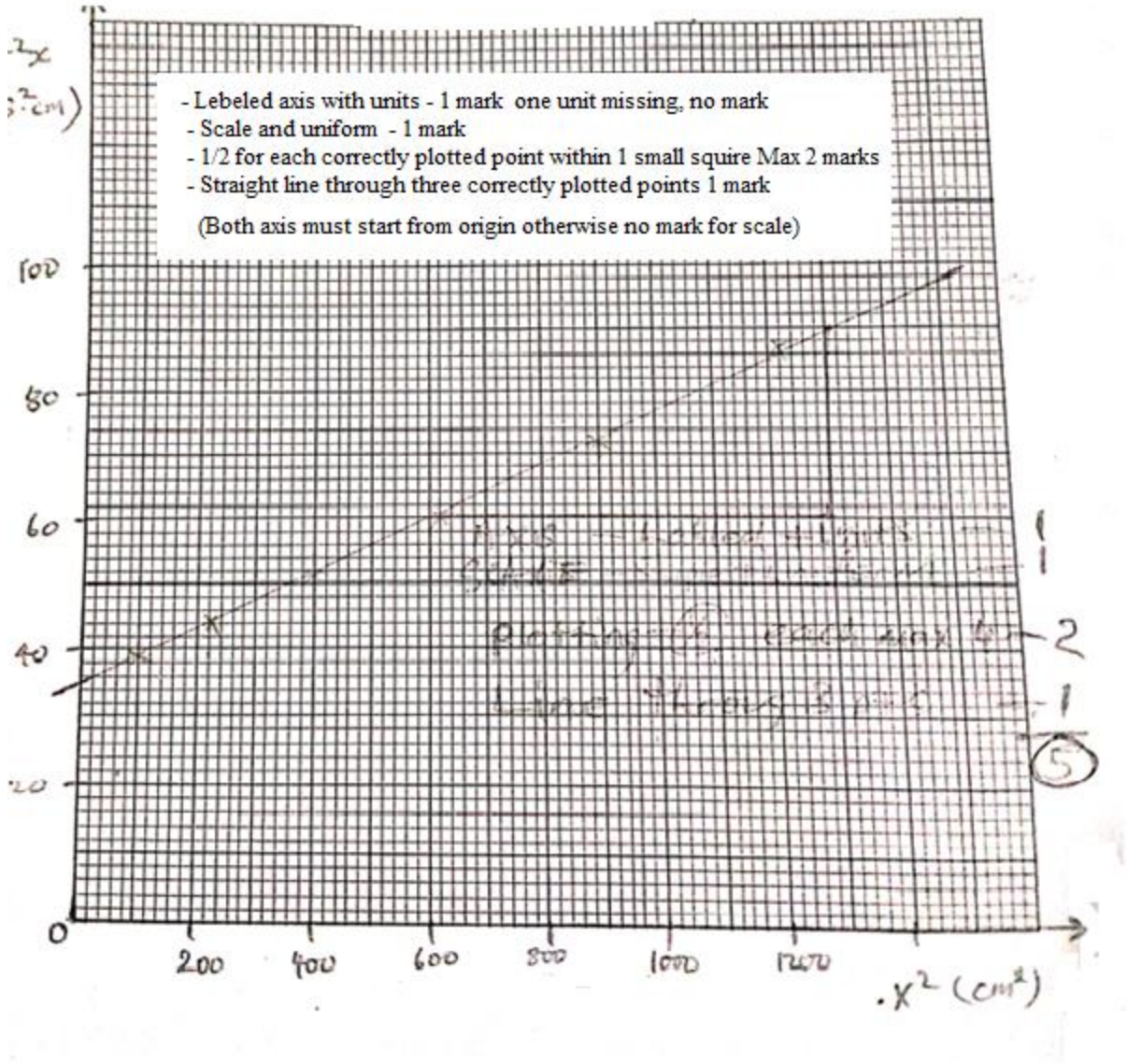


TEACHERS GUIDE – EXP 8

Provide the following apparatus;

- A meter rule
- 3 optical pins
- 2 small wooden blocks
- A stop watch
- A stand, boss and a clamp
- Some 6 pieces of Cello tape (4 cm)

<table>
<tr><th>WORKING</th><th>MARKING POINT</th></tr>
<tr><td>c) Allow range of +/- 0.1 for values of F
<table>
<tr><td>Distance X (cm)</td><td>10</td><td>15</td><td>20</td><td>25</td><td>30</td><td>35</td></tr>
<tr><td>Time t (s)</td><td>19.77</td><td>17.19</td><td>16.03</td><td>15.61</td><td>15.50</td><td>15.86</td></tr>
<tr><td>T (s)</td><td colspan="5">CORRECT EVALUATION</td><td></td></tr>
<tr><td>T^2. (s^2)</td><td colspan="5">CORRECT EVALUATION</td><td></td></tr>
<tr><td>T^2 X (s^2 cm.)</td><td colspan="5">CORRECT EVALUATION</td><td></td></tr>
<tr><td>X^2. (cm^2)</td><td colspan="5">CORRECT EVALUATION</td><td></td></tr>
</table></td><td>-For values of t, ½ max 3 marks
-Correct eval. For T, all 1 mark 3dp
-Correct eval. For T^2all 1 mark 4dp
-Correct eval. For T^2X all 1 mark 2dp
-Correct eval. For X^2all 1 mark
NOTE: Mark last three rows accordingly even if values of t are wrong</td></tr>
<tr><td>d) On grid attached.</td><td>As per graph 5 mks</td></tr>
<tr><td>e) Interval (From students' graph)
Evaluation
Answer with NO units. S = (0.038 – 0.048)</td><td>1 Mark
1 mark for eval.
1 mark 2 d.p</td></tr>
<tr><td>f) substitution
Evaluation of q
Ans. (9.0 – 10.0)</td><td>1 Mark of S and W
1 Mark
1 mark 1 d.p a must</td></tr>
<tr><td>g) substitution of Y- intercept in the equation
Evaluation of p</td><td>1 mark
1 mark 2dp a must.</td></tr>
<tr><td>TOTAL</td><td>20 MARKS</td></tr>
</table>


- Lebeled axis with units - 1 mark one unit missing, no mark
- Scale and uniform - 1 mark
- 1/2 for each correctly plotted point within 1 small squire Max 2 marks
- Straight line through three correctly plotted points 1 mark
(Both axis must start from origin otherwise no mark for scale)
100
80
60
40
20
0
200
400
600
800
1000
1200
X^2 (cm²)
1
1
2
1
5