**Governor Stirling Senior High School**

**2019 Year 12 Physics**

**Task 7B: Experiment – Current Balance**

Practical test part 2

10 Marks

The aim of this experiment is to calculate a theoretical value for µ0

The following data was collected from a current balance experiment.

Mass of wire = 1.45 x 10-5 kg

Length of loop (see saw balance) lloop = 3.00 x 10-2 m

Number of coils on the solenoid = 730

Length of solenoid lsoleniod = 0.150 m

1. Complete the table to calculate Bsolenoid using the relationships F= mg and F=Iloop lloop Bsoleniod

(2 marks)

Working space

|  |  |  |
| --- | --- | --- |
| Isolenoid (A) | Iloop (A) | Bsolenoid (T) |
| 0.65 | 1.2 |  |
| 0.42 | 1.8 |  |
| 0.30 | 2.6 |  |
| 0.24 | 3.2 |  |
| 0.20 | 4.0 |  |

1. Use this data to draw a graph of Bsolenoid vs Isolenoid (4 marks)
2. Calculate the gradient of this graph (2 mark)
3. The relationship between the current in a solenoid and the field in the solenoid is

Bsolenoid = µ0 N Isolenoid Usethis relationship to find a value for µ0  lsolenoid (2 marks)