General Certificate of Education
Advanced Subsidiary Examination
June 2015

Physics PHY3T/Q15/task

Unit 3 Investigative and Practical Skills in AS Physics
ISA (Q) EMF and Internal Resistance
Task Sheet

This task is worth 7 marks

You are advised to read through these instructions before beginning your work.

You are going to carry out an experiment to investigate how the current I through a power supply varies with the resistance R connected across it.

Switch the circuit off when you are not taking readings.

- You are provided with a set of resistors. Select the resistor with the **smallest** resistance value.
- Set up a circuit that will allow you to measure the current in the power supply and the resistor when connected in series. If a switch has been provided include the switch in your circuit. If a switch has not been provided you will be told how to disconnect your circuit.
- **Before switching on ask your supervisor to check your circuit.**
- Switch on the circuit and measure the current I in the circuit.
- Record the value of R and the corresponding value of I.
- Switch off, remove the resistor from the circuit and replace it with the resistor with the next highest resistance.
- Switch on the circuit and measure the new value of I.
- Repeat this procedure with all the resistors provided, increasing R each time.
- **Note that you do not need to obtain a further set of values for I and R for this experiment.**
- Record all your data in a suitable table, and include a column for $\frac{1}{I}$.
- Plot a graph of $\frac{1}{I}$ on the y-axis against R and draw a straight line of best fit.

  Start your R axis at 0.
- Record the precision of the ammeter used in your experiment.

After the investigation

At the end of the investigation, hand in all your written work, including the graph, to the supervisor.

This documentation will be required for Stage 2 of the ISA. Ensure that you have entered your centre details, candidate number and name on all sheets you have completed.