Junior Certificate – Coursework B
Marking Criteria – Electromagnets

Page 8:

Selected Investigation

Write down what it was that interested you in the topic of electromagnetism enough to carry out the investigation. A short sentence is all that is needed to show you have thought about how the investigation is relevant to you.

Period in which the investigation was carried out

Write down the dates between which you completed the investigation.

Page 9: - **Introduction /10 marks available**

1 (i) Introduction to the Investigation **(6)**

There are 6 marks available here and you have to work to get them. You need to write down clearly what you are trying to find out i.e. 'Investigating electromagnets' **is not enough** but 'Investigating how changing ……. affects the strength of an electromagnet……' is starting to get there. Be nice and clear and above all precise.

1 (ii) Indicate your particular interest

A short comment here is all that is required.

1 (iii) Background research **(2 x 2)**

You **must make reference to two different sources of information**. There are **2 marks** for each reference. If you use a person as a source you must say 'why this person was a suitable consultant.' Websites are great sources as are text books. Include the URL or page numbers, book title, edition, author, publisher, ISBN.

Page 10: - **Preparation and Planning /40 marks available**

This page is worth 40 marks. It is essential you fill it in properly.

2 (i) Identify any relevant variables and necessary controls **(3 x 4)**
(2 + 2 + 4)

A variable is anything you can change or changes as a result of what you are doing. **You must identify 6 variables and 3 of these must be essential with respect to the title**. For example, if your title mentions changing the number of coils then the number of coils is an essential variable. There are **4 marks** given for each of the **three essential variables** so it is worth making sure the examiner knows which you regard as essential. **Make sure you list 3 other relevant variables**; you get 2 marks each for the first and second and 4 marks for the third. Make sure you don't lose marks by being careless or lazy.

2 (ii) List of equipment needed **(5 x 2)**

List **at least 5 pieces of equipment** you need for your investigation. You get 2 marks for each of 5 relevant pieces of equipment. Bullet-point them if it makes your list easier to read.

2(iii) List of tasks to be carried out **(2 + 2 + 2 + 3 + 3)**

List at least **4 tasks** you will be doing in your investigation. For example 'changing the number of coils and measuring the effect on the strength of the electromagnet' or 'recording the results in a table'. Again, if it makes it clearer to read, bullet-point them.

Pages 11-17 – **Procedure /40 marks available**

3 (i) Particular safety precautions **(2 x 3)**

List **at least 2 safety precautions** you took and the reasons why. This should be fairly easy for you to do. Note that **3 marks** are awarded for each of two relevant safety precautions.

3 (ii), (iii), (iv) & (v) Procedure followed in the investigation **(8 x 3)**

This is where you write down carefully what you did in carrying out the investigation. **You must identify at least 8 steps**. Include lengths, number of volts etc in your description. Number your steps or bullet-point them if it makes

it easier to see what you have done. A nice clear, well drawn and labeled diagram will help to show the examiner what you are planning to do. Note that you have three sections for your procedure. If you changed the number of coils, the type of core and the voltage in three different experiments then use one section for each investigation.

3 (vi) Recorded Data / Observations **(2 x 5)**

You will probably present your data in table form. Remember to also write down any observations that you made such as the heating effect of an electric current and any influence that that might have had on your experimental method or predicted results. If you have spent your time wisely you should be struggling to fit all of the data into the space provided. Make sure it is very clear what the results are for with a title for each table i.e. 'How the number of coils affects the mass of paperclips that can be picked up'. Make sure you get all 10 available marks by having lots of data and **at least 5 observations**.

Pages 18- 23 – **Analysis and Conclusions /40 marks available**

4 (i) Calculations/ Data analysis **([4],[7] or [10])**

In this section the examiner will decide how well you have worked with your data and give you either 0, 4, 7 or 10 marks. For 10 marks you probably need to consider making a table of averaged results, plotting a series of graphs and making relevant comments about your results. Do with and write down everything you can think of that is relevant to the results you have collected.

4 (ii) Conclusion(s) and evaluation of results **([4],[7] or [10])**

Again the examiner is looking for maximum effort for 10 marks. You must draw **2 relevant conclusions** from your results and refer these specifically to your data; for example,' From the averaged results in lines 2,4,8 and 10 of table 2 you can see that every time the number of coils is doubled the mass of paperclips picked up doubles also' etc. If there are trends in the results are they the same for the complete range of results? Is there anything unusual in the results? Can you calculate a relationship? i.e. 'every 1 Volt produces a magnetic force sufficient to pick up 3.5 paperclips'.

Page 24 - **Comment /20 marks available**

5 Comments **(4 x [1] or [3] or [5])**

You must have **4 comments** on refinements, extensions and/or sources of error. i.e. How reliable is the data? How could you have improved the way you conducted the experiment? Where do you think there were sources of error and how could they have been reduced? How could you have extended the investigation to find out more about electromagnetism? If some results were unexpected, what do you think caused them? The examiner will decide how well you understand what you have done and give **1 mark for a simple comment** that shows little understanding, **3 marks for good understanding** or **5 marks for excellent understanding** for each of the **4 comments**. This is another very important page as you can gain or lose 16 points by being careful or careless. One small page worth 20 marks. It's up to you to finish off the write up with a first class set of relevant comments. A good comment to start off with is one that relates back to the statement you made about your investigation on page 9 section1 (i). Did anything change while you were taking your results that might have had an effect on the results? How could you make your results more accurate if you had time to do the investigation again?

Well done! You have completed Coursework B