Topic 5.2 – Summary project

**Understandings:**
- Circuit diagrams
- Kirchhoff’s circuit laws
- Heating effect of current and its consequences
- Resistance expressed as $R = \frac{V}{I}$
- Ohm’s law
- Resistivity
- Power dissipation

**Applications and skills:**
- Drawing and interpreting circuit diagrams
- Identifying ohmic and non-ohmic conductors through a consideration of the $V/I$ characteristic graph
- Solving problems involving potential difference, current, charge, Kirchhoff’s circuit laws, power, resistance and resistivity
- Investigating combinations of resistors in parallel and series circuits
- Describing ideal and non-ideal ammeters and voltmeters
- Describing practical uses of potential divider circuits, including the advantages of a potential divider over a series resistor in controlling a simple circuit
- Investigating one or more of the factors that affect resistance experimentally

**Guidance:**
- The filament lamp should be described as a non-ohmic device; a metal wire at a constant temperature is an ohmic device
- The use of non-ideal voltmeters is confined to voltmeters with a constant but finite resistance
- The use of non-ideal ammeters is confined to ammeters with a constant but non-zero resistance
- Application of Kirchhoff’s circuit laws will be limited to circuits with a maximum number of two source-carrying loops
Topic 5.2 – Summary project

In this project you will write an organized summary explaining this topic and addressing all of the assessment criteria listed above. You should...

● consult your notes, the textbook, class website) so that your efforts are not wasted,
● define the important concepts in your own words,
● include pictures and diagrams whenever they are relevant,
● show formulas and explain the meaning of each symbol,
● demonstrate in detail the usage of each formula through legitimate sample problems of your own design, including detailed solutions,
● adhere to significant figures and show correct units in your answers,
● show derivations of any formulas we derived in class or that you are able to derive.

Estimated time needed: 4h (2h class time + 2h homework)

You can complete the project on paper or electronically.

Upload the completed summary on managebac.