

EXAM STRUCTURE

- ◆ At NCEA Level 2, the electricity and magnetism standard can be broken down into the following topics:
 - ◆ Static electricity
 - ◆ DC electricity
 - ◆ Electromagnetism
- ◆ The exam involves a mixture of calculation-based and conceptual-based questions. The calculation questions at merit or excellence level often involve multiple steps.
- ◆ Typically, there are 3 to 4 questions on the external.
- ◆ This standard is actually quite nice in the sense that each question is on a distinct topic. It's not like mechanics where questions can have a mix of topics.
- ◆ There is usually a question on circuits (under the DC electricity topic), electromagnetism and induction (under the electromagnetism topic), and electric fields (under the static electricity topic).

COMMON MISTAKES

- ◆ Understand the difference between an electric field and a magnetic field.
- ◆ Use SI units.
- ◆ Students had trouble choosing the correct formula for calculations. This standard, like physics always does, involves a lot of formulae. Understanding each formula (the symbol, the units etc.) and the differences between them is key.
- ◆ Use the right hand rule correctly.

IMPORTANT BUT DIFFICULT CONCEPTS / SKILLS

- ◆ Being able to calculate total resistance for a series circuit versus a parallel circuit. Make sure that on the formula sheet, you identify which way is correct for the circuit you are dealing with.
- ◆ An electric field is created between two oppositely charged plates. When a charged particle is placed in between them, the electric force on the particle does not increase as the particle gets closer to its attractive plate.
- ◆ Conventional current is what the world follows. Electron current flows from negative to positive, whereas conventional current flows from positive to negative.
- ◆ Use the arrow analogy for magnetic field directions:
 - ◆ x: into the page (back of the arrow)
 - ◆ .: out of the page (arrow coming towards you)

STUDYING ADVICE

- ◆ Even though you get a formulae sheet, make a mind-map of all the formulae used for this standard. Annotate each formula. This will help you understand when each formula is able to be used!
- ◆ Find a method (e.g. flashcards) that will help you remember all of the terminology used in this standard. There is a lot of jargon used and it is easy to mix them up.
- ◆ Do lots of practice questions. Practicing is the best way to study physics. Make sure that you complete them as if you were under exam conditions - i.e. don't peek at the answers and time yourself! Once you've finished, you should mark yourself to see how you've done.
- ◆ Even if you don't explicitly need to use a formula, write down any relevant formulae when completing conceptual questions. There is no reason why you can't use formulae to aid your answers.
- ◆ Use the StudyTime website for some amazing resources - notes, checklist and a past exam. This will help you consolidate your knowledge to ensure you come out on top.

HOW TO PREPARE

- ◆ When solving problems, always write down all the information you are given. Looking at a big chunk of text can be pretty overwhelming.
- ◆ There is no reason why you can't attempt a merit or excellence problem. You get marks for steps - even if you don't finish the problem. If you think you can do parts of it, you absolutely should!
- ◆ Make sure that you double check all of your calculations.
- ◆ Don't forget to make sure that everything is in S.I. units.
- ◆ Remember that if you forget the units, you can always work it out from a formula.