July 2016

STEP Markscheme Observations

These are some observations we made upon using the STEP markschemes. It should be noted that 2016 was the first year that anyone had seen a markscheme, up until then no candidate had seen a markscheme and we had no idea how marks were allocated. Thus, you should make good use of the markschemes, although there are only a few, and check around forums as it is likely that more will become available in the coming years.

- When doing proof by induction, write a conclusion. It should not be a FP1-style conclusion, rather a simple: ' Hence the proposition is true by induction'. **Restate the now proven proposition.**
- When the answer is printed in the question, do not skip many stages and treat it like an A Level question i.e. show absolutely every step.
- If there is a gift first part to a question - do it, even if you are not going to attempt the later parts of that question fully. Such first parts are worth a precious few marks e.g. proving a simple trigonometric identity was worth 5 marks in II 2015.
- When working from a diagram that they have given the information to construct, state relationships generally before plugging in your values e.g. if there are points say '$DE = DB - EB$'.
- When you see a way through a question, execute it as quickly as possible - remaining neat throughout, so that time is conserved.
- Do not be afraid to write explanatory sentences which do not sound very mathematical - they are not expecting an university level of rigour.
- **A marks are for accuracy and are only given if the relevant M (method) mark has been given i.e. M0 A1 is impossible.**
- **Generally**, regardless of how many labelled parts a question has (i, ii, etc.), the marks are distributed in accordance with how difficult and/or time-consuming a certain 'part' of a question is - there is no concept that more marks are earned at the end of a question or that marks are evenly distributed amongst the labelled parts. **So use judgement**.
- **Generally**, there are 3 or 4 batches of marks to be earned - these correlate to the distinguishable 'parts' of the question.
- They like the notation: $min\,(A,\,B)$ and $max\,(A,\,B)$ to mean the 'minimum of A and B' and 'maximum of A and B' respectively.
- **'The first question is set with the intention that everyone should be able to attempt it' - STEP II 2012 Examiners' Report.**
- When you are asked to 'prove', 'show that' or 'deduce' something is true observe if it can be proved directly from the question, if not, then think of which of the

proof techniques to use: **induction, contradiction or exhaustion (considering all cases)**.

- **If you are stuck, look at the question again and spot information that you have not yet used - this is likely to be the key to solving the part you are stuck on. All information given in the question must be used in the solution.**