

# CISC 462 Assignment 2 Postmortem

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## 1. Whole question: 10 marks.

Everyone did quite well on this question. The most common mistake was not reading the question carefully enough! Some students assumed the input encodings were valid when they weren't, and some students assumed a question was asking about the emptiness problem ( $E$ ) instead of the equivalence problem ( $EQ$ ).

Even though there were 7 parts to this question, it was marked out of 10. To make marking simple, I just deducted one mark for each incorrect answer. (This means that if you got all of the parts wrong, you would still earn 3 marks. However, nobody got all of the parts wrong.)

## 2. Whole question: 10 marks.

Everyone did quite well on this question. This question was easier than the other decidability questions.

## 3. Part (a): 3 marks. Part (b): 7 marks.

A common source of errors in part (a) was not understanding the definitions of “onto”, “one-to-one”, or “correspondence”.

For part (b), students came up with a variety of proofs, many of which were correct. The most common reason for deductions was not providing enough detail/being too vague in the proof. Remember: your job is to convince me that you know what you're talking about!

## 4. Whole question: 10 marks.

One of the most common mistakes, again, was not reading the question carefully enough. In this question, we are trying to decide a property of a language. Quite a few students thought we were testing an individual string, but if you look at the input encoding, we are not given a string. The only thing given as input is an encoding of a regular expression.

## 5. Whole question: 10 marks.

The biggest issue for most solutions to this question was lack of detail. Make sure you write out what you're doing at each step in order to help me understand your thought process.

One comment I often make is that reductions of the type asked in this question tend to follow a “template”. If you have trouble understanding how these questions should be solved, look in the textbook or course notes and see how similar reduction proofs were written, then follow that approach.

## 6. Whole question: 10 marks.

There were two approaches to this question: reduce  $A_{TM}$  to the problem or reduce  $E_{TM}$  to the problem. The reduction using  $A_{TM}$  is given in the assignment solutions and is quite lengthy. The reduction using  $E_{TM}$  is much more straightforward, but it required a clever observation.

Questions/comments? Feel free to stop by my office hours or send me an email at `tsmith [at] cs [dot] queensu [dot] ca`.