
Spring 2002 - Final Exam Common Mistakes

Problem #1

The set of all function of type $\{0,1\} \rightarrow \{0,1\}$ is finite, there are only four functions of this type, therefore the set is countable. Many students got carried away by trying to find a bijection with the set of natural numbers or by trying to prove the set is uncountable.

Penalty: 4 points

Problem #5

Many students read the problem as asking for the last three characters in the input string to be *all* a's, when in fact the problem asked for the detection of *any* a in the last three letters of the input string (bbbbab would qualify since it has an a in the last three letters).

Penalty: 1 point

Problem #6

Many students provided a grammar instead of an inductive definition.

Penalty: 4 points

Problem #7

Many students provided a regular expression instead of a context free grammar.

Penalty: 4 points

Problem #8

Many students concluded the argument is invalid by looking only at the conclusion of the argument. In fact, for the argument to be valid, the whole implication must be a tautology. Assuming p ="Logic is difficult", q ="Many students like logic", and r ="Mathematics is easy", the argument can be written as $((p \vee q) \wedge (r \rightarrow \neg p)) \rightarrow (q \rightarrow \neg r)$. It is this implication that one has to show is a tautology for the argument to be valid.

Penalty: 3 points for students who correctly concluded the argument is not valid, even though they had the wrong proof.

Problem #11

The count was $5^3=125$, many student used various formulae that did not apply in this case.

Penalty: 4 points