

2002 Paper 1 Question 2

Discrete Mathematics

- (a) What is a *well-founded relation*? [2 marks]
- (b) Let \prec be a well-founded relation on a set A . Show that any non-empty subset S of A has a \prec -minimal element, i.e. an element $m \in S$ such that if $x \prec m$, then $x \notin S$, for all $x \in A$. [4 marks]
- (c) Let a and b be distinct symbols. Using part (b), or otherwise, show that there is no string u such that $au = ub$. [4 marks]