2008 Paper 9 Question 8

Specification and Verification II

(a) Explain how the structure of circuits can be represented in logic. Discuss the role of quantifiers and of higher-order functions and relations. [8 marks]

(b) Show how a predicate characterising the set of reachable states of a transition relation can be defined in higher-order logic. [4 marks]

(c) Write down formulae in both Computation Tree Logic (CTL) and Linear Temporal Logic (LTL) that are true whenever a property P holds of all reachable states. Define the semantics of any temporal operators that you use. [8 marks]