Specification and Verification II

(a) Discuss the challenge of modelling transistors in a way that is both tractable for formal verification and accurate enough to be useful. [5 marks]

(b) Discuss the accuracy of the simple switch model of transistors and discuss how the model can be improved. [5 marks]

(c) Outline how transistor circuits that use precharging can be formally modelled in higher order logic. Briefly discuss potential inaccuracies of such models. [5 marks]

(d) Describe how to specify that a bit-level circuit with 4-bit inputs $a$ and $b$ and an 8-bit output $prod$ performs multiplication. [5 marks]