

1997 Paper 4 Question 6

Structured Hardware Design

Describe the behavioural constructs found in a Hardware Description Language (HDL) such as Verilog. [3 marks]

Give and briefly describe fragmentary examples of behavioural sections of an HDL which fall into the following categories:

- (a) An example using only the RTL (register transfer language) subset of the language. [3 marks]
- (b) An example using more than the RTL subset of the language, yet which is synthesisable. Is there a one-to-one correspondence between user-defined HDL variables and the resulting flip-flops? [3 marks]
- (c) An example which is not typically synthesisable by today's general-purpose logic synthesisers. [3 marks]

Describe the use and benefits of a behavioural model for:

- (d) rapid prototyping [2 marks]
- (e) design entry [2 marks]
- (f) simulation [2 marks]
- (g) simulation test wrappers and stimulus generation [2 marks]