1997 Paper 7 Question 4

ECAD Topics

Describe the principal data structures and algorithms used in the construction of an event-based digital logic simulator. [10 marks]

Illustrate your answer with a description of how the simulator would model an RS flip-flop made from two cross-coupled NOR-gates with the following inputs:

Time 10	R & S both zero
15	R becomes one
20	S becomes one
25	R becomes zero
30	S becomes zero

The delay of the Q gate should be 6 units and that of the $\overline{\text{Q}}$ gate 3. [10 marks]