UNIVERSIDAD CARLOS III DE MADRID

ICs Test Exercises

Integrated Circuits and Microelectronics

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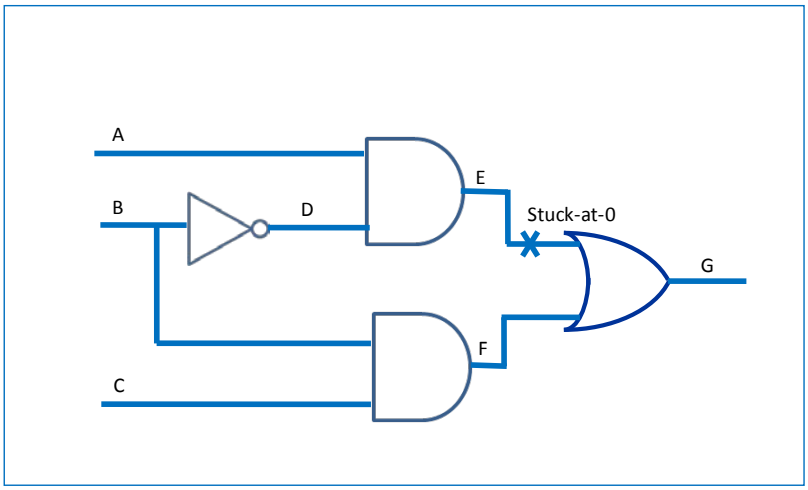
Problem 1

For the circuit in the figure:

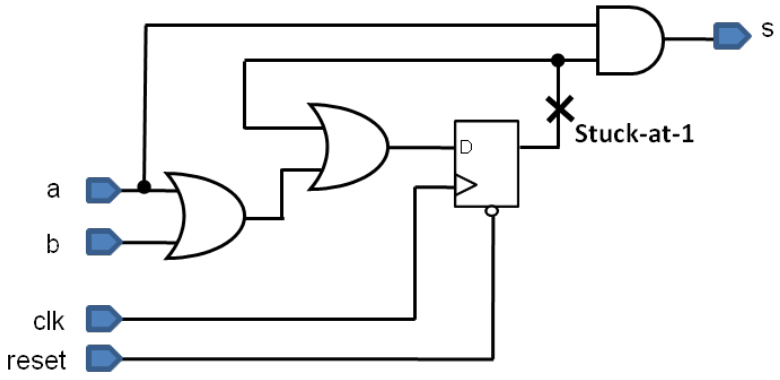


a) Find a test vector that detects that E is stuck-at-0.
b) What is the test coverage given by this test vector?
c) Add more vectors (the least possible number) so that the maximum possible coverage is achieved. How many vectors are needed, and which is the coverage for them?
d) Are there any untestable faults? Describe possible solutions to increase the coverage in those circuits with untestable faults.

Consider that all the lines connected to B are a single line when it comes to fault insertion.

Problem 2

For the circuit in the figure:



a) Specify all the necessary conditions for detecting the stuck-at-1 fault pointing out in the figure (by observing the output *S*)
b) Represent in a chronogram the required conditions.