Solution of HW 4

(1) Faulty functions for the circuit corresponding to the two faults are:

$I(c \rightarrow \text{s-a-0}) = b(\overline{ab}) = b\bar{a}$

$I(f \rightarrow \text{s-a-1}) = (a + b)\,\bar{a} = b\bar{a}$

(2) Faulty functions corresponding to the two faults are:

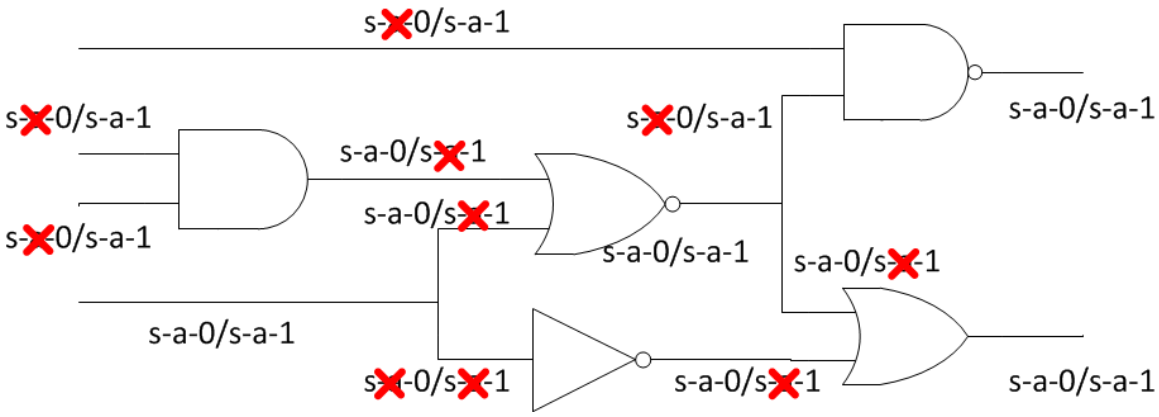
$Z(c \rightarrow \text{s-a-1}) = \overline{ab}$

$Z(f \rightarrow \text{s-a-1}) = \overline{ab}$

The two faulty functions are indistinguishable and hence the faults are equivalent.

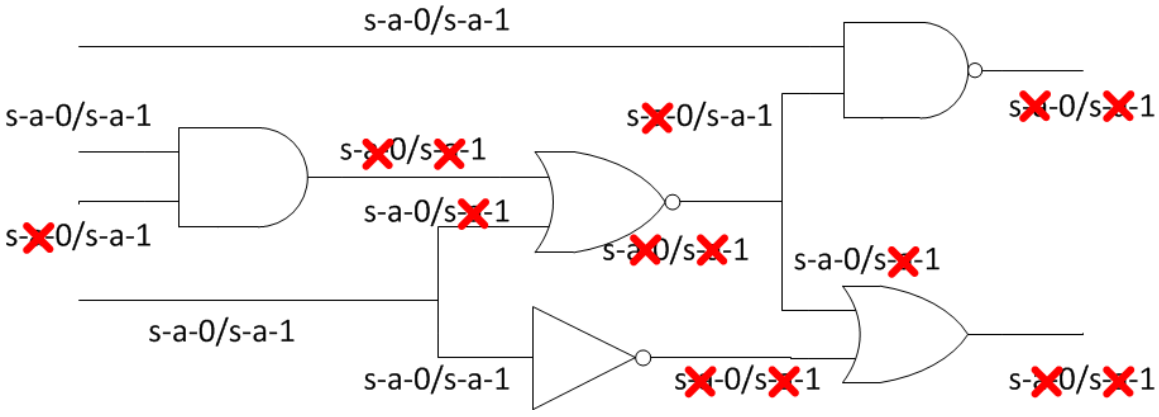
(3) Fault Sites = #PIs + #Gates + #Fanout branches = 4 + 5 + 4 = 13

Equivalence collapsed set:



Collapse Ratio = 16/26 = 0.615

Dominance (& Equivalence) collapsed set:



Collapse Ratio = 12/26 = 0.462