

CSE 244A

HW #4.

5.9 For the circuit in Figure 5.38, determine the faults detected by the test 111 by

~~deductive~~ deductive fault simulation (start with a collapsed set of faults)

~~deductive~~

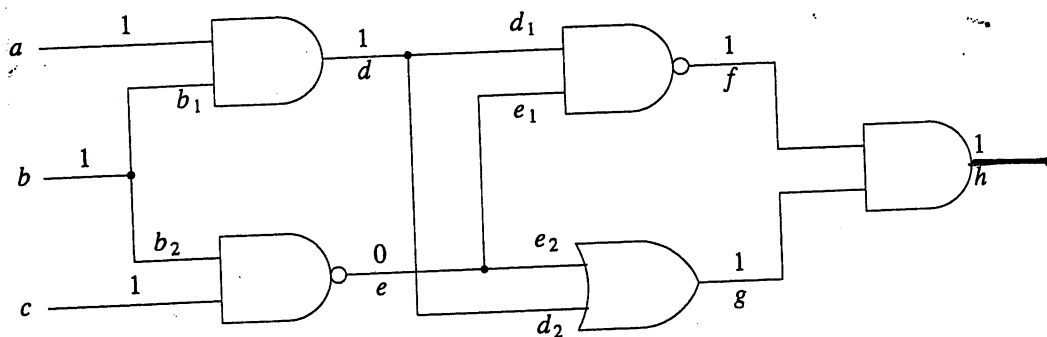


Figure 5.38

Collapsed fault set

a_0	d_{10}
a_1	d_{11}
b_0	d_{20}
b_1	d_{21}
~~b_{10}~~	~~e_{10}~~
b_{11}	e_{11}
b_{20}	e_{20}
b_{21}	~~e_{21}~~
~~c_0~~	
c_1	

$$\begin{aligned} a_0 &= b_{10} \\ b_{20} &= c_0 \\ d_{10} &= e_{10} \\ e_{21} &= d_{21} \end{aligned}$$

$$L_a = \{a_0\}$$

$$L_b = \{b_0\}$$

$$L_{b1} = \{b_{10}\} \cup L_b = \{b_{10}, b_0\}$$

$$L_{b2} = \{b_{20}\} \cup L_b = \{b_{20}, b_0\}$$

$$L_c = \{c_0\}$$

$$L_d = L_a \cup L_{b1} \cup \{d_{10}\} = \{a_0, b_{10}, b_0, d_{10}\} = \{a_0, b_{10}\}$$

$$L_e = L_{b2} \cup L_c \cup \{e_{10}\} = \{b_{20}, b_0, c_0, e_{10}\} = \{b_{20}, b_0\}$$

$$L_{d1} = L_d \cup \{d_{10}\} = \{a_0, b_{10}, d_{10}\}$$

$$L_{e1} = L_e \cup \{e_{11}\} = \{b_{20}, b_0, e_{11}\}$$

$$L_{d2} = L_d \cup \{d_{20}\} = \{a_0, b_{10}, d_{20}\}$$

$$L_{e2} = L_e \cup \{e_{21}\} = \{b_{20}, b_0, e_{21}\}$$

$$L_f = L_{e1} \cap \overline{L_{d1}} \cup \{f_0\} = \{b_{20}, e_{11}, f_0\} = \{b_{20}, e_{11}\}$$

$$L_g = L_{d2} \cap \overline{L_{e2}} \cup g_0 = \{a_0, d_{20}, g_0\} = \{a_0, d_{20}\}$$

$$\begin{aligned} L_h &= L_f \cup L_g \cup \{h_0\} = \{b_{20}, e_{11}, a_0, d_{20}, h_0\} \\ &= \{b_{20}, e_{11}, a_0, d_{20}\} \end{aligned}$$