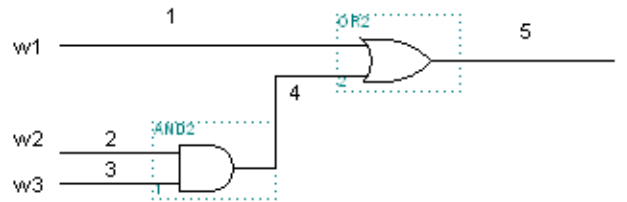


Reference Solution:

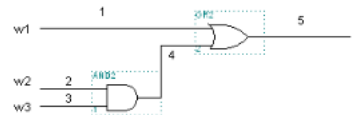
Assignment #4 - ECED 4260 IC Design and Fabrication

- 1) For the following circuit, using the stuck at model:
 - a. Find the equivalent faults; reduce $2n$ faults to k faults.
 - b. For each of the k faults, find test vectors. Provide input $(w1, w2, w3)$, correct output (f) and faulty output (f^*) .
 - c. What is the minimum test pattern required?



- a. Find the equivalent faults; reduce $2n$ faults to k faults.

1 s.a. 1 = 4 s.a. 1 = 5 s.a. 1
2 s.a. 0 = 3 s.a. 0 = 4 s.a. 0



- b. For each of the k faults, find test vectors. Provide input $(w1, w2, w3)$, correct output (f) and faulty output (f^*) .

1 s.a. 0:	$w1w2w3=10\phi, 1\phi0$	$f=1, f^*=0$
1 s.a. 1 = 4 s.a. 1 = 5 s.a. 1 :	$w1w2w3= 00\phi, 0\phi0$	$f=0, f^*=1$
2 s.a. 0 = 3 s.a. 0 = 4 s.a. 0 :	$w1w2w3= 011$	$f=1, f^*=0$
2 s.a. 1:	$w1w2w3= 001$	$f=0, f^*=1$
3 s.a. 1:	$w1w2w3= 010$	$f=0, f^*=1$
5 s.a. 0:	$w1w2w3= 1\phi\phi, \phi11$	$f=1, f^*=0$

- c. What is the minimum test pattern required?

Minimum test set = {001, 010, 011, 100 (or 101 or 110)} (Not unique)

