

QUESTION 5

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The term defect means any manufacturing mistakes which are unintended ,for example that the metal wire track is discontinuous and can result that the logic level on that track is not what we want .So defect are those things which are differences between implemented hardware and our intended functionality of the circuit .The examples of defects can be that the two wires which are close together can cause a short at some place due to electro-migration ,another example is that there is no via connection between two metal lines that can result in the wire path to be open .

Now, if such defects do exist in our circuit and we subject such a circuit to some inputs, we already know what value the output will take but the observed output of such a system differs from the expected and we say that there is an error when the outputs mismatch and they mismatch because of a defect in our circuit which is due to manufacturing or due to phenomenon like electro-migration which happens when the circuits are used for a considerable amount of time.

The term fault means that we are modeling these defects that exist in a logical manner and it is used to describe the change in logic function of a circuit caused by the defect, also such abstraction reduces the number of test cases. Fault is also an observable change in the behavior of the circuit. Some types of fault are stuck at faults where we assume the node of a circuit to be always at a particular logic level, another example of fault is bridging fault which is used to model the short between two wires. The stuck at model is one of the fault model ,not all faults can be described using stuck at fault but if the circuit is subjected to test vector for certain stuck at fault and the circuit gives correct output then we declare that the circuit is 99% functioning correctly .