

國立中山大學
資訊工程學系所

Introduction to EDA&Testing – Spring, 2022

Homework Assignment #3

Due Date: April 13, 2022

Question 1-3 Functional Fault Patterns; Question 4-5 PLA Faults.

1. (20%) For a D F/F of the following truth table, try to derive a set of function pattern to test this F/F. What functional fault can be detected by your derived pattern.

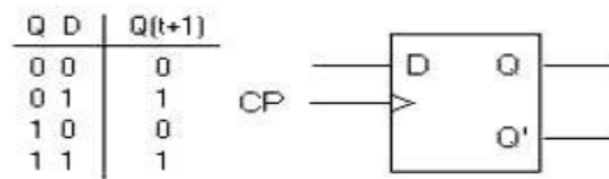


Figure 1. D F/F

2. (20%) For a T F/F of the following truth table, try to derive a set of function pattern to test this F/F. What functional fault can be detected by your derived pattern.

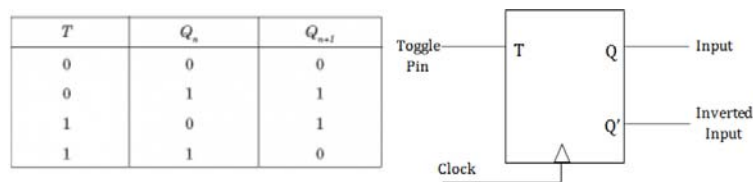


Figure 2. T F/F

3. (20%) For a J-K F/F of the following truth table, try to derive a set of function pattern to test this F/F. What functional fault can be detected by your derived pattern.

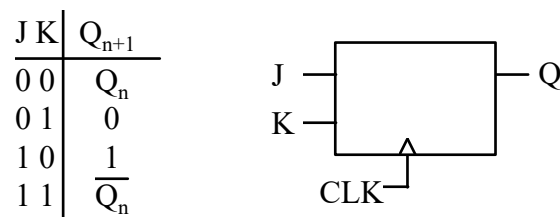


Figure 3. J-K F/F

4. PLA Faults, Given $f1 = AB + BC + CA + \overline{A}\overline{B} + \overline{B}\overline{C} + \overline{C}\overline{A}$, $f2 = AB + BC + CA$

(20%) Please draw AND-Array and OR-Array of Missing Crosspoint Faults in AND-OR Plane, and show the equivalent stuck fault representation.

- a. Missing Crosspoint Faults: Missing C in AND Plane
- b. Missing Crosspoint Faults: Missing {P1, P3, P5} in f1 in OR Plane.

5. PLA Faults, Given $f_1 = AB + BC + CA$, $f_2 = \bar{A}\bar{B} + \bar{B}\bar{C} + \bar{C}\bar{A}$

(20%) Please draw AND-Array and OR-Array of Extra Crosspoint Faults in AND-OR Plane, and show the equivalent stuck fault representation.

- a. Extra Crosspoint Faults: Extra \bar{B} in P1, A in P2, C in P3 in AND Plane
- b. Extra Crosspoint Faults: Extra {P4, P5, P6} in f_2 in OR Plane.