

III B.Tech I Semester Supplementary Examinations, November 2006

DIGITAL SYSTEMS DESIGN

(Electronics & Computer Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Find the CAMP – II Printout for the function.

$$f = \sum (0, 1, 3, 5, 7 - 10, 13 - 15, 17, 21, 25, 29) \quad [16]$$

2. (a) Obtain the ASM charts for the following state transitions.

i. if $x = 0$, control goes from state T1 to state T2 ; if $x = 1$, generate a conditional operation and go from T1 to T2.

ii. if $x = 1$, control goes from T1 to T2 and then to T3 ; if $x = 0$, control goes from T1 to T3.

iii. Start from state T1; then if $xy = 00$, go to T2; if $xy = 01$, go to T3; if $xy = 10$, go to T1; otherwise go to T3.

- (b) Draw the portion of an ASM chart that specifies a conditional operation to increment register R during state T1 and transfer to state T2 if control inputs z and y are equal to 1 and 0, respectively. [12+4]

3. (a) List the PLA programming table for the combinational circuit defined by the functions.

$$F_1 (abc) = \sum (3, 5, 6, 7)$$

$$F_2 (abc) = \sum (0, 2, 4, 7)$$

- (b) What is meant by PLA? Draw a block diagram and explain its working. [8+8]

4. (a) Discuss the path sensitization in a combinational circuit. shown in figure1

- (b) Find the test set to detect A^1 - SA0 and A^1 - SA1 faults using Boolean difference method. [8+8]

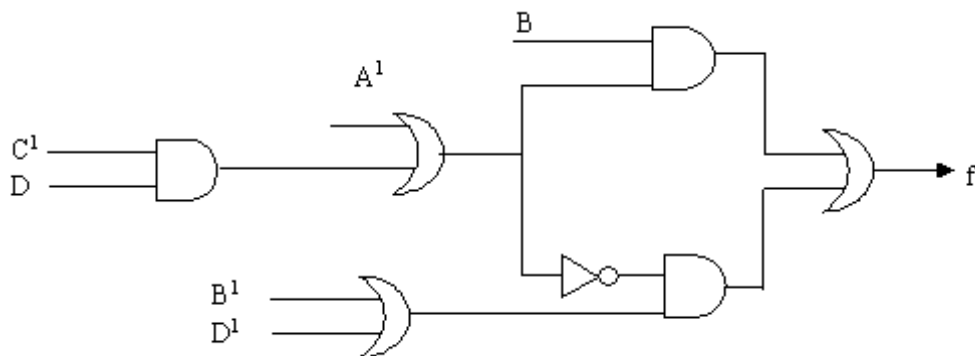


Figure 1:

5. Write a note on fault tolerant VLSI processor arrays. Explain with the help of a VLSI processor array structure. [16]
6. (a) What is a diagnosable sequential machine? Discuss the design of definitely diagnosable machine.
- (b) For the machine shown below determine whether or not preset distinguishing sequences exist, and if any do exist, find the shortest ones. [8+8]

PS	NS, Z	
	X = 0	X = 1
A	D, 0	C, 1
B	A, 0	B, 1
C	E, 0	B, 1
D	B, 0	D, 1
E	C, 1	E, 1

7. Minimize the following function implemented on PLA using IISC algorithm.

$$f = 0200 + 1102 + 2201 + 0011 + 0010 \quad [16]$$

8. (a) How is IISC algorithm different from CAMP algorithm? Discuss in detail.
- (b) What is meant by built in self test? How does this improve the performance of a system? [8+8]
