Total No. of Questions : 8] [Total No. of Printed Pages : 2

Roll No. .....

EC–504(O)

B. E. (Fifth Semester) EXAMINATION, Dec., 2009

(Old Scheme)

(Electronics and Communication Engg. Branch)

DIGITAL CIRCUITS AND SYSTEM – II

[EC – 504(O)]

Time : Three Hours

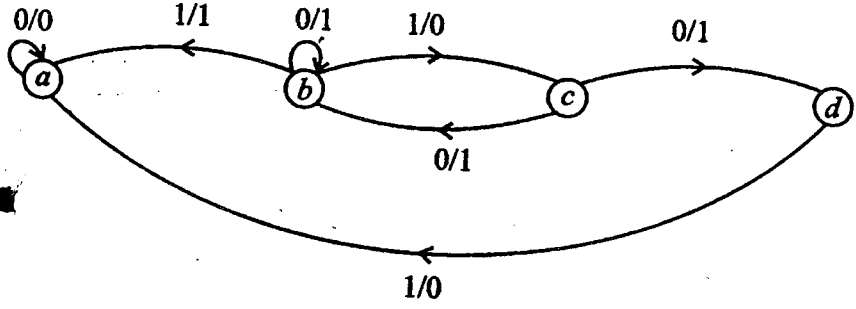
Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt any *five* questions. All questions carry equal marks. Assume and mention suitable missing data if any.

1. (a) With the help of a block diagram, explain Mealy and Moore circuit. Compare Mealy and Moore circuit. 10

   (b) Convert the Mealy machine into Moore machine. 10



2. (a) Design a sequence detector for 10010 sequence. 10

   (b) Write the condition for choosing maximal compatible pairs (condition of closure and covering). 10

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3. (a) Write VHDL code for Johnson counter. 10

   (b) Design an iterative cell for network which gives output 1 when sequence 0101 occurs. Overlapped sequences are accepted. 10

4. (a) Find the hazard in network which realizes the function :

$$y = (x_1 + x_2)(x'_2 + x_3)$$

   Eliminate it. 10

   (b) Design an asynchronous circuit which has 2 inputs x_1, x_2 and output z, $z = x_1$, as long as $x_2 = 0$. Output maintains its previous when $x_2 = 1$. 10

5. (a) Describe in brief critical and non-critical races. 10

   (b) How does the state assignment for synchronous machine differ from that of asynchronous machine ? 10

6. (a) Design ASM chart for serial adder. 10

   (b) What do you understand by "Algorithmic State Machine" ? What is the concept of hardware and firmware algorithm ? 10

7. Design a controller for binary multiplier. 20

8. (a) Compare between PROM, PLA and PAL. Give the list of applications of PROMs. 10

   (b) Implement the following function by PLA : 10

$$F_1 = AB + BC$$

$$F_2 = A'C + A'B$$

$$F_3 = ABC + A'B'$$