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Roll No. ....

**EX-8402**

**B. E. (Eighth Semester) EXAMINATION, June, 2012**

(Electrical & Electronics Engg. Branch)

**DIGITAL ELECTRONICS & LOGIC DESIGN – II**

(Elective – IV)

(EX – 8402)

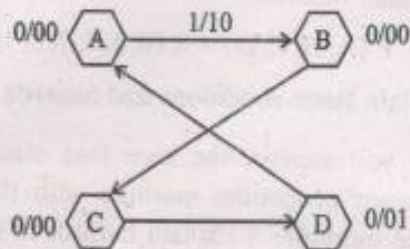
Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

**Note :** Attempt any five questions. All questions carry equal marks.

1. (a) Explain the parity bit generator with the help of state table and state diagram. 10
- (b) Convert the following Mealy machine to Moore machine. 10



2. A long sequence of pulses enters a two-output synchronous sequential circuit, which is required to produce an output

P. T. O.

pulse  $Z = 1$  whenever the sequence 1110 occurs. Overlapping sequences are accepted : 20

- (i) Draw a state diagram.
  - (ii) Select an assignment and show the excitation.
  - (iii) Write down the excitation function of SR flip-flops and draw logic diagram
3. Using VHDL describe a binary-to-decimal converter that has a four-bit input vector and the output in the BCD representation. 20
  4. What do you understand by essential hazards ? Show that the following machine has essential hazard : 20

$Y_1 Y_2 Y_3$	X	
	0	1
010	110	010
110	110	111
111	101	111
101	101	111

5. (a) Find a circuit that has no hazards and implements the Boolean function : 10  

$$F(A, B, C, D) = \Sigma(0, 3, 6, 7, 8, 10)$$
 (b) Explain Race conditions and hazards. 10
6. How do you explain the race free state assignment of asynchronous sequential machine with the help of three flow table examples ? Explain hazards in sequential circuit or machine. 20
7. (a) What is the fundamental concept of hardware/firmware algorithm ? Explain. 10
- (b) Draw the ASM chart of sequence recognizer to recognize the input sequence of pair  $X_1 X_2 = 01, 01, 11, 00$ . 10
8. Explain in short (any three) of the following : 20
  - (i) PLA
  - (ii) XILINX
  - (iii) GAL
  - (iv) VHDL