

Seat  
No.

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BII1313

## Digital System Design (New) (1100)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** questions from each unit.
5. Draw neat diagram whenever necessary.
6. Assume suitable data if necessary.
7. Non-programmable calculator allowed.

### UNIT - I

1. Design BCD to 7-segment decoder for common anode using 4:16 decoder. 10
2. Design BCD to gray code converter using basic gates ? 10
3. Design MOD-9 counter using IC 7493 ? 10

### UNIT - II

4. What is ROM ? How do you specify size of ROM ? Draw the block diagram and internal structure of 4 x 2 ROM. 10
5. Design BCD to 7-segment decoder display using minimum size of PLA ? 10
6. Realize the function given using a PLA with 6 input, 4 output & AND gates ? 10  
 $F_1(A, B, C, D, E, F) = \sum m(0, 1, 7, 8, 9, 10, 11, 15, 19, 23, 27, 31, 32, 33, 35, 39, 40)$   
 $F_2(A, B, C, D, E, F) = \sum m(8, 9, 10, 11, 12, 14, 21, 25, 27, 40, 41, 42, 43, 44, 46, 57, 59)$

### UNIT - III

7. Explain following terms : 10
  - i) State table
  - ii) State diagram
  - iii) State reduction
  - iv) State assignment.

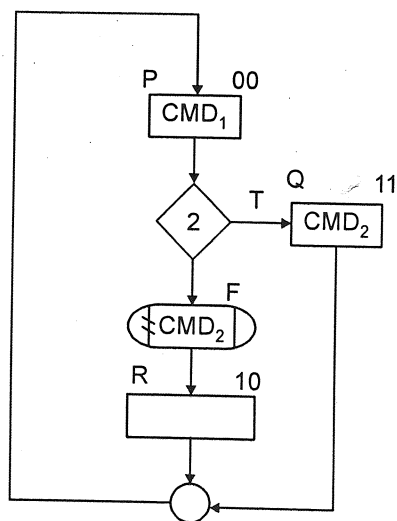
8. Design 3 bit counter with control input E. The counter will high under for state 0-2-4-6-0  
The control will under go step 1-3-5-7-1 if control signal E is head low. 10
9. Explain sequence generator & detector with example. 10

#### UNIT - IV

10. Design an Asynchronous sequential circuit that has 2 input  $x_1, x_2$  and 1 output z when  $x_1 = 0$  the output Z is 0. The first change in  $x_2$  that occure while  $x_1$  is 1 will cause o/p z to be 1. The output z will remain 1 until  $x_1$  return 0. 10
11. Differentiate asynchronous & synchronous sequential circuit with example ? 10
12. Design mod-6 ripple counter using J-K flip-flop ? 10

#### UNIT - V

13. Explain following term : 10  
 i) Entity. ii) Architecture.  
 iii) Configuration Declaration. iv) Generic.  
 v) Data object.
14. Construct state table & design a sequential circuit for ASM chart. 10



15. Explain operation in microwave oven and construct the ASM chart for them ? 10

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