

School of Computer Science & Engineering

Continuous Assessment Test - I

CSE1003-Digital Logic and Design

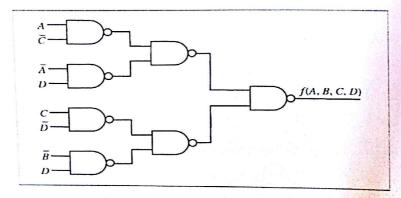
Time: 1:30 Hrs Max.Marks:50

Answers ALL the questions (10×5=50 Marks)

- 1. a) The solutions to the quadratic equation $x^2 13x + 32 = 0$ are x = 5 and x = 4. [2] What is the base of the numbers?
 - b) (i) Convert 231.34 to base 7. [3] (ii) Add -8 and +19 in 2's complement for a word length of n=8. (iii) $(367)_8 * (715)_8 = ---------$
- 2. Simplify the following Boolean functions to a minimum number of literals and draw the logic circuit for the minimized expression. [5]

F(A,B,C,D) = [(A+C'+D)(B'+C)(A+B'+D)(B'+C)(B'+C+D')]'

- 3. A long hallway has three doors, one at each end and one in the middle. A switch is [5] located at each door to operate the incandescent lights along the hallway. Label the switches A, B, and C. Design a logic network to control the lights.
- 4. Realize the equivalent circuit using NOR gates one for the one shown below: [5]



- 5. Expand F(P,Q,R) = P + PQ + QR' to minterms and maxterms.

 $f(A,B,C,D) = \sum m(4,6,8,10,11,12,15) + d(3,5,7,9)$

[5] 6. Dertermine the minimum-cost POS expressions for the function [5]

(P.T.O)

[5]

7. Simplify the Boolean function F using the don't care conditions d in SOP F = w'(x'y + x'y' + xyz) + x'z'(y+w)d = w'x(y'z + yz') + wyz8. Explain the full subtractor with the neat circuit diagram. [5] 9. Reduce the expression using tabulation method and find the prime implicants [5]

 $F(A,B,C,D) = \sum (0,1,2,3,6,7,13,15)$ [5] 10. Design a Combinational circuit that accepts a 3-bit number and generates as output a binary number equal to the square of the input number.

-----ALL THE BEST-----

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