D 20628-A (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, OCTOBER 2011

CS/IT 09 306/PTCS 09 305—SWITCHING THEORY AND LOGIC DESIGN

(2009 admissions)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. Convert $(342.45)_{10}$ to binary and Octal.
2. What is prime implicant ?
3. What is the difference between decoder and demultiplexer ?
4. What are the terms that determines the size of a PLA ?
5. What is meant by race around condition ?

($5 \times 2 = 10$ marks)

Part B

Answer any **four** *questions.*

6. Write short note on weighted code.
7. Explain how can AND-OR circuit can be converted to NAND and NOR logic.
8. Explain 1 of 8 demultiplexer with neat logic diagram.
9. Explain briefly different types of ROMs.
10. Determine the Boolean difference for the following functions :—

    $Y_1 = AB + AC + BC$

    $Y_2 = (A + B)(A + C)(B + C)$.
11. Draw the logic diagram of a 3 bit binary ripple counter using toggle flip-flops.

($4 \times 5 = 20$ marks)

Part C

12. (a) (i) Use Karnaugh map to simplify the function $F = AB + A(B + C) + B(B + C)$. (5 marks)

    (ii) Implemen the function $Y = AB + \overline{A}\overline{B} + \overline{B}C$ with OR and inverter gates. (5 marks)

Or

(b) Simplify the following Boolean function by using Quine McCluskey mehtod :

$F(A, B, C, D) = \Sigma m (0, 2, 3, 6, 7, 8, 10, 12, 13)$.

Turn over