ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : SEPTEMBER 2009

REGULATIONS – 2007

THIRD SEMESTER : ELECTRONICS & COMMUNICATION ENGG.

070290018 - DIGITAL ELECTRONICS

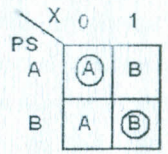
TIME : 3 Hours Max.Marks : 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. Convert $(0.513)_{10}$ to octal.
2. Compare 1's complement and 2's complement.
3. State and prove absorption theorem.
4. Define prime implicant.
5. Realize the function Y=A+BCD' using NAND gates.
6. What is a tristate gate?
7. Give the design procedure for combinational circuits.
8. What does excitation table of a flip-flop mean?
9. Differentiate between synchronous and asynchronous counters?
10. What is Mealy model?
11. Draw the state diagram of a 3 bit counter?
12. What is a shift register?
13. Can hazard occur in a clocked sequential circuit?
14. What is meant by a race condition in an asynchronous sequential circuit?
15. Determine whether hazard exists in the given Karnaugh map.



16. What is a flow table?
17. How is memory size specified?
18. Give the classification of memories based on the principle of operation.
19. Compare PROM and PLA.
20. What range of hex address values are used in 64K memory?

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. Using K map method simplify the Boolean function $Y = \Sigma m(0,2,3,6,7) + \Sigma d(8,10,11,15)$ and obtain (i)SOP and (ii)POS expressions. Also implement them using universal gates.

22. Find the minimal sum of products for the Boolean expression $F=\Sigma(1,2,3,7,8,9,10,11,14,15)$ using QuineMcCluskey method.

23. Explain in detail the working principle of Fast Adder.

24. Implement the given Boolean function using multiplexer.
$F (A, B, C, D) = \Sigma (1,3,4,11,12,13,14,15)$

25. Draw and explain the working of a universal shift register.

26. Design a mod 3 synchronous counter using JK flipflop.

27. State with a neat example the method for the minimization of primitive flow table.

28. Implement the following two Boolean functions with a PLA.
$F1 (A, B, C) = \Sigma (2,4,5,7)$
$F2 (A, B, C) = \Sigma (0,1,2,4,6)$