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SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act,1956)

Course & Branch :B.E/B.Tech - CSE/IT

Title of the Paper :Digital Computer Fundamentals Max. Marks :80

Sub. Code :412305-511305-512305-6C0044

Time : 3 Hours

Date :07/11/2009

Session :FN

PART - A

(10 x 2 = 20)

Answer ALL the Questions

1. Convert $(325)_{10}$ in to binary.
2. What is a Gray code?
3. Write Demorgan's theorem?
4. What is don't care condition?
5. Give Half-Subtractor circuit.
6. Compare Multiplexer and Demultiplexer.
7. What is T-Flip-flop?
8. What is Ripple Counter?
9. Differentiate ROM and RAM Memories.
10. Give storage hierarchy.

PART – B

(5 x 12 = 60)

Answer All the Questions

11. Given the two binary numbers $X = 1010100$ and $Y = 1000011$, perform the Subtraction
 (a) $X - Y$ and (b) $Y - X$ Using 1's and 2's Complements.
 (or)
12. Discuss Error detection, Reflection, Alphanumeric and Self-complementary codes.
13. (a) Express the Boolean function $F = A + B'C$ in a sum of Minterms.
 (b) Express the Boolean function $F = xy + x'z$ in a product of Maxterms.
 (or)
14. Simplify the following Boolean function by using the tabulation method.

$$F = \Sigma (0,1,2,8,10,11,14,15)$$
15. (a) Implement a full subtractor with two half-adders and an OR gate?
 (b) Explain 4-bit adder subtractor.
 (or)
16. Design BCD-to- Excess-3 code converter.
17. A sequential circuit has two flip flops (A and B), two inputs (X and Y), and an output (z). The flip-flop input functions and the circuit output functions are as follows

$$\begin{aligned} JA &= xB + y' B' & KA &= xy' B' \\ JB &= x A' & KB &= xy' + A \\ Z &= x y A + x' y' B \end{aligned}$$

 (or)
18. Design a BCD Counter with JK flipflops.
19. Discuss Virtual Memory in detail.
 (or)
20. (a) Explain Static and Dynamic ROM Memories. (7)
 (b) Discuss Random Access Memory (5)

