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Question Bank
Of
Digital Electronics(2131004)
Branch: IT/COMPUTER

1. Convert $(75)_{10}$ = (_____)$_2$

   Convert $(101011)_2$ = (_____)$_{10}$

   Convert $(10101101)_2$ = (_____)$_{16}$ = (_____)$_8$

2. What is self-complementing code? Represent $(472)_{10}$ in 2421 self-Complementing code.

3. Convert $(96)_{10}$ to its equivalent gray code and EX-3 code.

4. Perform addition in BCD format $(79)_{BCD} + (16)_{BCD}$

5. Reduce the given function using K-map and implement the same using gates.

   $F(A,B,C,D) = \sum_m (0,1,3,7,11,15) + \sum_d (2,4)$

6. State De Morgan's theorems and prove with the help of truth table.

7. Perform subtraction of $(78)_{10} - (58)_{10}$ using 2's complement method.

8. Minimize the following Boolean expressions.

   X = ((A'B'C')' + (A'B)')'

   Y = AB + ABC' + A'BC + A'BC'

9. Minimize following Boolean function using K-map & design the simplified function using logic gates.

   $F = \sum_m(1, 2, 4, 6, 7, 11, 15) + \sum_d(0, 3)$

10. Minimize the following logic function using K-maps and realize using NAND and NOR gates.

    $F(A,B,C,D) = \sum_m (1,3,5,8,9,11,15) + d(2,13)$.

11. Minimise the logic function and Use Karnaugh map. Draw the logic circuit for the simplified function using NOR gates only.

    $F(A, B, C, D) = \pi_M (1, 2, 3, 8, 9, 10, 11,14) . d (7, 15)$

12. Prove That....

    (i) $XY + YZ + \overline{Y}Z = XY + Z$

    (ii) $A.B + \overline{A}.B + \overline{A}.\overline{B} = A + B$

13. What are the different types of the codes used in digital systems? Explain them.

14. Reduce the expression

    F = ((AB)'+A'+AB)'

15. A combinational circuit has 3 inputs A, B, C and output F. F is true for following input combinations

    A is False, B is True

    A is False, C is True

    A, B, C are False

    A, B, C are True

    (i) Write the Truth table for F. Use the convention True=1 and False = 0.

    (ii) Write the simplified expression for F in SOP form.

    (iii) Write the simplified expression for F in POS form.

    (iv) Draw logic circuit using minimum number of 2-input NAND gates

16. Implement following logic function using 8X1 MUX.

    $F = \sum_m(0, 1, 3, 5, 7, 11, 13, 14, 15)$

17. Write short note on half adder and full adder.

18. Design a full adder using 3X8 decoder followed by gates.

19. Design 4-to-16 Decoder from two 3-to-8 Decoders.

20. Design a synchronous BCD counter with JK flip-flops.

21. Explain the working of multiplexer.

22. Design a circuit for 2-bit magnitude comparator.

23. Design 3-bit even parity generator circuit.

24. Draw & explain in brief pin diagram of 7485 four-bit magnitude comparator.

25. Draw the truth table of full subtractor and implement using minimum number of logic gates.

26. Give the applications of Decoder.

27. Implement the given function using multiplexer

    $F(A,B,C) = \sum_m (1,2,4,7)$

28. Reduce the following expression using K-map and implement using NAND gates only.

    $F = \sum_m (0,2,3,4,5,6)$

29. Convert D flip flop into SR flip flop

30. Draw the circuit diagrams and Truth table of all the Flip flops (SR, D, T and JK).

31. Implement the given function using 8 X 1 Multiplexer

    $F(A,B,C,D) = \sum m (0,1,2,3,5,8,9,11,14)$

32. With the help of function table and circuit diagram explain the working of clocked SR flip flop.

33. Design 4-bit ripple counter using negative edge triggered JK flip flop.

34. Define followings:

(i)Fan in

(ii)Fan out

(iii) Noise Margin

(iv) Propagation delay

(v)State table

(vi)Power Dissipation

(vii) Threshold Voltage.

35. Compare the Followings in every aspect.

    1.TTL and CMOS

    2.RAM and ROM

36. Compare ROM, PLA and PAL

37. With neat sketch design 4-bit bidirectional shift register

38. Give the comparison between synchronous and asynchronous counters.

39. Distinguish between combinational and sequential logic circuits. Give the applications of flip-flops.

ALL THE BEST