Subject: Digital logic Fundamentals

Subject Code: (CS102S)

Class: I BSC (CS)

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PART-A (5 Marks)

1. Convert the following Decimal Number $(756.2)_{10}$ into Octal.
2. Convert the following Hexa Decimal Number $(10A7)_{16}$ into Binary.
3. Convert the Fractional Binary Number $(1011011.110)_2$ into $(?)_8$, $(?\ )_{16}$.
4. Find the 1's & 2's Complement for $(10101)_2$
5. Perform the following operation 1010 -1011 using 2's complement.
6. 7 - 5 Subtract using 9's complement.
7. Multiply the numbers $(111)_2$ and $(101)_2$.
8. Prove x.(x + y) = x
9. Simplify the logical Expression (x + y) (x' + z) (y + z)
10. Explain about logic gates.
11. Prove: AB + BC (B + C) = B (A + C)
12. Explain EX-NOR gate with circuit diagram.
13. F(A,B,C) = AB' + BC convert this into SOP
14. Define what is Max term?
15. F(X,Y,Z)=∑(0,2,3,5,7)
16. Simplify the following Boolean Function F(A,B,C,D) = ∑(0,1,5,8,9,10)
17. F(A,B,C)=∑(0,4,7)+D(1,2,6)
18. Simplify the function Y = ABC' + ABC by k-map method.
19. Explain the classification of combinational logic circuit
20. Explain Half Subtractor.
21. Define what is Encoder?
22. Explain about RS Flip Flop.
23. Explain Binary-Up-Counter
24. What is T-Flip Flop?
25. Write the canonical form for F(A,B,C) = ∑(0,2,3,5,7)

PART-B (10 marks)

1. Explain Digital Computer with Neat diagram.
2. State and Explain about Number System.
3. Convert the following (i) (AB.12)16 into Decimal [ii] (750.12)10 into Octal.
4. ADD the Following Binary Numbers:($(111111)_2$ and $(1010101)_2$

5. Explain Basic Theorems and Rules of Boolean algebra?
6. Prove the Universality of NAND and NOR Gate
7. Prove De-Morgan's theorem.
8. Prove Distributive law: A+ (B + C) = (A + B) + C
9. Draw Logic gate for F(X, Y, Z) = (X + Y + Z') . (X' Y Z')
10. Explain Min Term & Max Term with Boolean values Table.
11. Prove:(i) A ^ (B ^ C) = (A ^ B) ^ C (ii) A^ (A V B) = A
12. Find the Complement of X (Y' + YZ) + Y Z'
13. Convert the following into Max Term F(A,B,C)=(A+B').(B+C)
14. Explain Various Types of k-maps in Detail.
15. Simplify using k-map F(W,X,Y,Z)=(1,2,5,6,9,10,11,14,15)
16. Explain Full Adder in Detail
17. What is BCD ADDER? How it is working?
18. Discuss about Binary Parallel Adder.
19. Explain in Detail about Multiplexors and De- Multiplexors.
20. Discuss about 3×8 Line Decoder
21. Explain about Clocked RS Flip Flop
22. Explain the Working of Master – Slave flip flop.
23. Discuss about JK flip flop.
24. State what is Counter? Discuss about Binary Ring Counter
25. Explain Asynchronous Counter with Clock Diagram