MODULE - 1

DIGITAL LOGIC QUESTION PAPER

3 - MARK QUESTIONS

1. Add 11011101 and 111011 ?
2. Subtract 0012 from 1002 ?
3. Multiply 110102 by 110112 ?
4. Define and explain 1’s complement and 2’s complement ?
5. Express the decimal number -51as an 8-bit number in sign- magnitude form, 1’s complement and 2’s complement forms ?
6. Convert gray 1001011 to binary ?
7. Add 9 and 9 using BCD ?
8. Gray code is not used for performing arithmetic operations. Why?
9. What is BCD code ?
10. Differentiate between weighted and non- weighted codes with example
11. What is meant by parity bit?
12. Demonstrate even and odd parity scheme with example.
13. Illustrate the advantage of check sum over parity scheme.
14. Explain parity row and parity column in block parity
15. Find the odd parity bit of the data 0111.
16. Encode data bits 1101 into the 7 bit even parity Hamming code .
17. Encode data bits 1101 into the 7 bit odd parity Hamming code
18. Illustrate the use of error correcting codes.
19. What is the code word format of a 7bit hamming code with an example?
20. Explain the use of hamming code.
21. What is ASCII code?
22. Describe the EBCDIC code.
23. Write a note on alphanumeric codes.
24. Identify the use of alphanumeric codes
25. Compare ASCII code and the EBCDIC code

10 – MARK QUESTION

1. (a) Discuss various operations on binary numbers with example.   
    OR  
   (b) Detect and correct errors in the following even parity hamming code 0101101
2. (a) Perform the following subtraction using 1’s complement method.  
    i) 10101-00110  
    ii) 1001-101.101  
    iii) 10101011-101010  
    OR  
   (b) Perform the following operation  
    i) BCD subtraction of 679.6-885.9 using 9’s complement.   
    ii) 275+493 in BCD code.   
    iii) Convert the binary 1101110010 to gray code.
3. (a) Perform the following subtraction using 2’s complement method.  
    i) 1011011011-101101  
    ii) 10101011-101010  
    iii) 11.10-110.1  
    OR  
   (b) Explain the working of 7 bit hamming code with an example
4. (a) Explain the rules for the following (i) binary Addition; (ii) Binary Subtraction.   
    OR  
   (b) Perform the following operation.  
    i) 648 + 487 in BCD code.   
    ii) 206.7-147.8 in BCD code.  
    iii) Convert the binary 100001 to gray code.

MODULE - 2

3 – MARK QUESTIONS

1. State and prove DeMorgan’s theorem using truth table
2. State the basic laws of Boolean Algebra
3. State and prove any three rules of Boolean Algebra.
4. Define variable and complement with examples.
5. Using Boolean algebra techniques, simplify this expression AB + A (B + C) + B (B + C)
6. Simplify the following Boolean expression : A’BC + AB’C’ + A’B’C’ + AB’C + ABC
7. Apply DeMorgan’s theorem to the expression ( (A + B + C) D)’
8. State and prove Commutative law.
9. Define SOP and POS.
10. Write the steps to convert SOP into standard SOP.
11. Convert the following Boolean expression into standard SOP form AB’C + A’B’ +ABC’D
12. Convert the following Boolean expression into standard POS form (A + B’ + C)(B’ + C + D’)(A + B’ + C’ + D)
13. What do you mean by Don’t care condition?
14. Map the following standard POS expression on a Kmap (A + B + C)(A+B+C’)(A’+B’+C’)(A’+B’+C)
15. What is an SOP expression. Give an example?
16. Map the expression F = A’B’C + AB’C + A’BC’ + ABC’ + ABC on a Kmap
17. What are SOP and POS forms? Explain.
18. What is an Adder?
19. Differentiate between Half adder and Full adder?
20. Explain Half adder with a logic diagram?
21. Explain full adder with logic diagram?
22. Define Magnitude Comparator.
23. Explain 1 bit magnitude comparator.
24. Explain 2 bit magnitude comparator
25. What is a Multiplexer?
26. With a diagram explain 2 input multiplexer?
27. Explain four input multiplexer with a neat diagram?
28. Define Sequential circuit.
29. What is a T flip-flop?
30. Explain the operation of JK flipflop?
31. Discuss the working of SR flipflop?
32. What is a D flip-flop?
33. What is a flip-flop?
34. What is a shift register?
35. What is a Universal shift register?
36. List out basic types of shift registers.
37. Write note on Bidirectional shift register?
38. What is SISO shift register?
39. Discuss about PISO shift register?
40. Explain PIPO shift register?
41. What is SIPO shift register?
42. How is a register different from shift register?

10 - MARK QUESTIONS

1. a) Discuss the operation of full adder with circuit diagram and truth table. OR b) Explain the operation of JK flip-flop with logic diagram, truth table and symbol.
2. a) With the help of logic diagram and truth table, explain half adder and full adder? OR b) Draw Karnaugh map and simplify the Boolean expression Y(A,B, C,D) = ∑(3, 4, 5, 6, 7, 11, 12, 13, 14, 15)
3. a) With the help of logic diagram and function table explain a 4-input multiplexer? OR b) State and prove the rules of Boolean Algebra.
4. a) Explain 1 bit and 2 bit magnitude comparator in detail. OR b) With the help of logic diagram and function table explain a 2-input multiplexer?
5. a) Solve the following using K-Map. F(A,B,C, D) = ∑(1,3,9,11,4, 5, 12, 13, 10,14) . OR b) With neat diagram explain the working of any two types of shift registers.
6. a) Draw and explain a four-bit serial-in, parallel-out shift register? OR b) Briefly explain the salient features of SR and JK flipflop?
7. a) Explain in detail how data is transmitted in shift registers? OR b) Explain 2 bit magnitude comparator in detail.
8. a) With neat diagram explain the working of Bidirectional shift registers? OR b) Briefly explain the salient features of SR and T flipflop?

COMPUTER ORGANIZATION QUESTION PAPER

MODULE - 3

3 – MARK QUESTIONS