COMPUTER SCIENCE

Marks : 50

Std : XI *Ln-2 Number Systems* **Time : 1.30 hrs**

I. Choose the correct answer: ***15x1=15***

1. How many characters can be handled in Binary Coded Decimal System?
   a) 255 b) 256 c) 64 d) 128
2. What is the 2's complement of $(-24)_{10}$?
   a) 00011000 b) 11101000 c) 11100111 d) 00011001
3. Which is considered as the basic unit of measuring the memory size in the computer?
   a) Bit b) Nibble c) Byte d) Digit
4. The ASCII value for blank space is a) 32 b) 48 c) 97 d) 65
5. In signed magnitude method, the left most bit is MSB is called
   a) Sign bit b) Least Significant Bit c) Parity bit d) a or c
6. The octal equivalent of $(65)_{10}$ is
   a) 1000001_2 b) 41_{16} c) 101_8 d) 01100101_2
7. The most commonly used numbering system is
   a) Binary b) Decimal c) Octal d) Hexadecimal
8. 2^50 is referred as a) Kilo b) Tera c) Peta d) Zetta
9. A + A = ? a) 0 b) 1 c) A d) $\bar{A}$
10. Which is the basic electronic circuit which operates on one or more signals to produce an output signal?
    a) Boolean algebra b) Gate c) Logical operations d) Fundamental gates
11. Which gate is called a logical inverter?
    a) AND b) OR c) NOT d) NAND
12. The output of XNOR gate is
    a) $C=A \oplus B$ b) $C=\overline{A+B}$ c) $C=A \odot B$ d) $C=\overline{A \cdot B}$
13. The NAND is the combination of
    a) NOT and OR b) NOT and AND c) NOT and NOT d) NOT and NOR
14. Who proposed the basic principles of Boolean algebra?
    a) John Mauchly b) Charles Babbage c) George Boole d) J.Presper Eckert
15. What represent all the possible values of logical variable or statements along with all the possible results of given combination of truth values?
    a) Truth values b) Truth table c) Logical operations d) Logical variables

II. Answer any 5 questions. Q.No.19 is compulsory. ***5x2=10***

16. What is radix of a number system? Give example.
17. Add: a) $1101010_2 + 101101_2$ b) $1011_2 + 1001_2$
18. What is word length?

19. Convert the given binary number $(11.011)_2$ into its decimal equivalent.

20. Write the associative laws and De Morgan's laws.

21. Draw the truth table for XNOR gate.

III. Answer any 5 questions. Q.No.27 is compulsory. ***5x3=15***

22. Write a short note on ASCII.

23. Convert $(255)_{10}$ into its equivalent binary, hexadecimal and octal number.

24. Give the truth table and logical symbol of XOR gate.

25. Draw the truth table for Bubbled OR gate and Bubbled AND gate.

26. How AND gate can be realized using NOR gate?

27. Write the procedure to convert fractional decimal to binary.

IV. Answer the following questions: ***2x5=10***

28. Explain the fundamental gates with expression and truth table. (OR)

    i) Convert $(98.46)_{10}$ to binary. ii) Convert $(25F)_{16}$ into its equivalent Decimal number.

29. Explain the universal gates with expression and truth table. (OR)

    Perform the following binary computations. i) $-22_{10} + 15_{10}$ ii) $-12_{10} - (-27_{10})$ iii) $10_{10} + 23_{10}$

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