

Code: A-C223115-A

I SEMESTER EXAM - 2024-25

2 x 205

Std.: XI

Sub: Computer Science - II

Marks: 50

Date:

Roll No.: _____

Time: 3 hrs

Q.1 A] Rewrite the statement with correct alternative. (1 mark each) [4]

- i) The Boolean statement $A + B \cdot C = (A + B) \cdot (A + C)$ represents _____ law?
a) Commutative b) Associative c) Distributive d) Idempotent
- ii) In Boolean Algebra, $1 + 1 =$ _____
a) 1 b) 2 c) 11 d) 0 with carry 1
- iii) The maximum digit in Octal number system is _____
a) 8 b) 7 c) F d) 9
- iv) Converting the binary number $(100110)_2$ to hexadecimal equivalent, we get = _____
a) 46 b) 36 c) 26 d) 34

Q.1 B] Attempt any 2 of the following. [6]

- i) Define OR gate with working, diagram and proper truth table.
- ii) Explain NOT gate with working, diagram and truth table. Write an alternate name for NOT gate.
- iii) Complete the statement; $\bar{x} \cdot x =$ _____. Name the gates that will be used to realize this Boolean expression and the law represented by this Boolean statement.

Q.2. A] Attempt any 2 of the following. [6]

Perform Binary Arithmetic on given binary numbers, showing all the steps neatly -

- i) $1011011 + 1100110 + 10110111$. Also write 1's complement of final answer.
- ii) $1011000100101 - 101100110110$. Also write 1's complement of final answer.
- iii) $10111101011 + 111001111001101$. Also write 1's complement of final answer.

B] Attempt any ONE of the following. [4]

- i) State both the laws of De-Morgan's in Boolean algebra. Prove any one law using truth table,
- ii) Define any four of these (a) bit (b) nibble (c) byte (d) string (e) word

Q.3. A] Attempt any TWO of the following. [6]

- i) Explain Ex-OR gate with working, diagram and proper truth table with symbols,
- ii) Differentiate Inclusive OR and Exclusive OR with 2 points. Which of these gates is extended to make an Ex - NOR gate?
- iii) What are universal gates? Explain any one with logic diagram.

B] Attempt any ONE of the following. [4]

- i) Differentiate Inclusive OR and Exclusive OR with 2 points. Which of these gates is extended to make an Ex - NOR gate?
- ii) Realize (draw) the Boolean Expression $BC + A + (A + C)$ using logic gates.

Q.4. A] Attempt any TWO of the following. [6]

- i) Convert following numbers into Decimal numbers
a) 1F9C H b) 6754_8 c) 101100111_2
- ii) Convert as directed -
a) 1FADE H into Octal number b) 7568 into Hexadecimal number
- iii) Convert following Decimal numbers into as directed -
a) 890076 into Octal number b) 9009910 into Hexadecimal number

B] Attempt any ONE of the following.

[4]

i) Convert following as directed -

a) Decimal number 111111 into binary number and find 2's complement of the answer.

b) Hexadecimal number 5B H into binary number and find 2's complement of the answer.

ii) Perform subtraction by 2's complement method on given binary numbers :

1001001 - 11101101

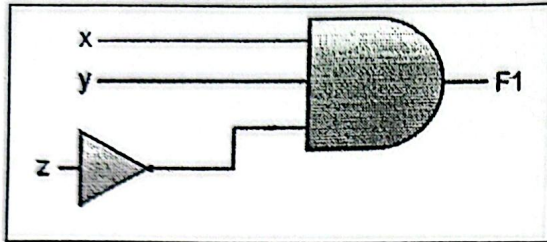
Q.5

Any two of the following :

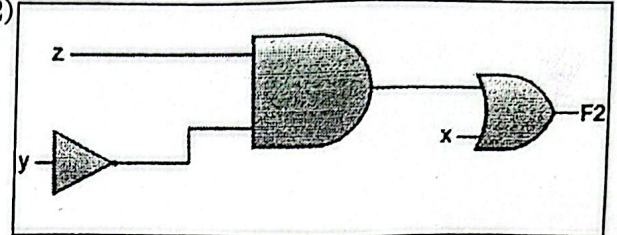
[10]

Derive a Boolean expression for the following logic circuit -

1)



2)



3)

