

Code: A-C337115-M

I Semester Exam – 2022-23

3 x 170

Std.: XI

Sub: COMPUTER SCIENCE - II

Marks: 50

Date: 23/11/2022

Roll No.: _____

Time: 3 Hrs.

- 1) All questions are compulsory.
- 2) Draw a neat and labeled diagram wherever necessary.
- 3) Figure to the right indicates full marks.

Q.1 A) Select the correct alternatives and rewrite the following.

4

- 1) $(A)_{16} + (C)_{16} = ?$
 a) $(16)_{16}$ b) $(22)_{10}$ c) Both a and b d) Neither a nor b
- 2) In Theorem of Boolean Algebra: $A \cdot A = ?$
 a) 0 b) 1 c) A d) None
- 3) $(101010)_2 + (11011101)_2$
 a) $(100000111)_2$ b) $(263)_{10}$ c) Both a) and b) d) Neither a nor b
- 4) The decimal equivalent of the Hexadecimal Number 10 is _____
 a) F b) 10 c) 16 d) A

B) Answer any two of the following.

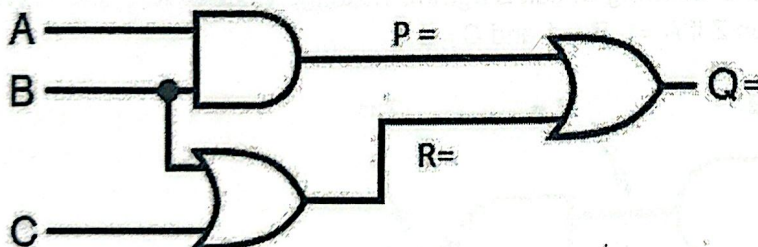
6

1. $(1000)_{10} = (?)_2 = (?)_8 = (?)_{16}$
2. $(1111)_8 = (?)_2 = (?)_{10} = (?)_{16}$
3. $(ABCDEF)_{16} = (?)_2 = (?)_8 = (?)_{10}$

Q.2 A) Answer any two of the following.

6

1. Define OR gate. Draw diagram and truth table.
2. Given Following Circuit Diagram. What will be the value of P, Q and R?



3. How many input combinations are possible for 3 inputs lines in a gate? Explain with the help of truth table and draw 3 input lines NOR gate.

B) Answer any one of the following.

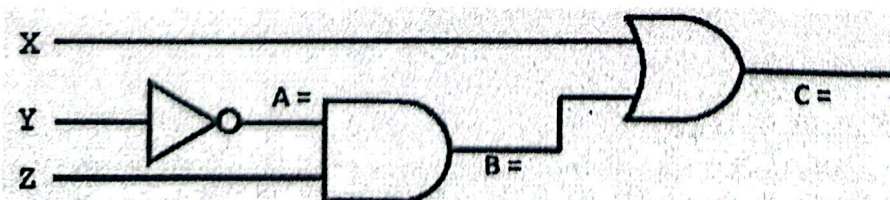
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1. The logic equation of Ex-OR gate is : $Y = A' \cdot B + A \cdot B'$. Draw the circuit diagram for the Ex-OR gate logic equation using OR, AND and NOT gate.
2. Perform $(11011011)_2 - (11111111)_2$ using 2's Complement method. Explain each steps involved while performing the subtraction.

Q.3 A) Answer any two of the following.

6

1. Given Following Circuit Diagram. What will be the value of A, B and C?



P.T.O

2. Explain $\overline{(A + B)} = \overline{A} \cdot \overline{B}$ with the help of truth table.
3. $(11011011)_2 + (101)_8 = (?)_{10}$ [Convert Octal to Binary and perform Binary Addition]

B) Answer any one of the following.

4

1. Consider $(A) = 5A_H$, $(B) = C3_H$, show with working, the result of following operations _____
 - a) ANDing operation on A and B
 - b) ORing operation on A and B
 - c) Ex-ORing on A and B
 - d) NANDing operation on A and B
2. State and Explain 2 Distributive laws with the help of Truth Table.

Q.4 A) Answer any two of the following.

6

1. Define AND gate. Draw diagram and Truth Table.
2. How many maximum input and output is possible for NOT.gate. Explain with Truth Table.
3. Explain $\overline{(A \cdot B)} = \overline{A} + \overline{B}$ with the help of truth table.

B) Answer any one of the following.

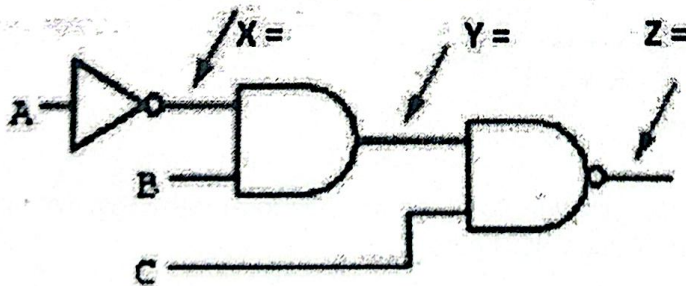
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1. State and explain 2 Commutative laws with the help of Truth Table.
2. $(10110101)_8 + (1E6)_{16} = (?)_{10}$ [Convert Octal, Hexadecimal to Binary and perform Binary Addition]

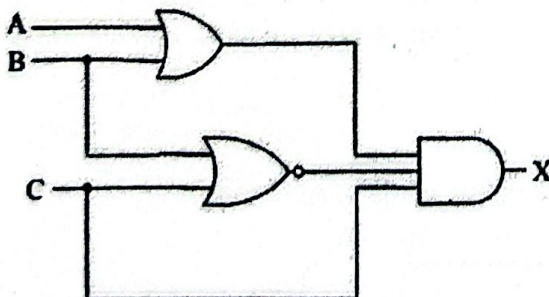
Q.5 A) Answer any two of the following.

10

1. Solve the following:
 - a. $(100)_2 = (?)_{10}$
 - b. $(FED)_H = (?)_2$
 - c. $(77)_8 = (?)_H$
 - d. $(7007)_{10} = (?)_8$
 - e. $(143)_8 = (?)_{10}$
2. Name the gates used in the following Circuit Diagram. Write the value of X, Y and Z. What will be value of expression Z if $A = 1$, $B = 1$ and $C = 1$:



3. With reference to the circuit diagram given below, what will be the value of X if



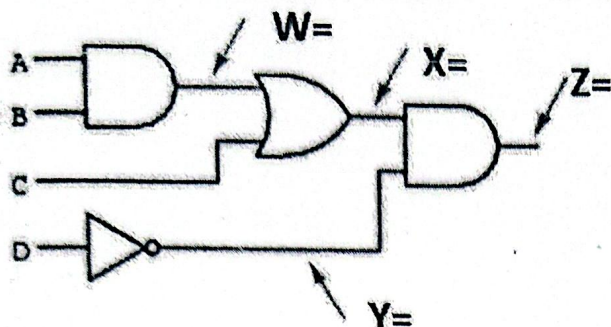
- a) $A = 0, B = 0, C = 0$
- b) $A = 1, B = 0, C = 0$

OR

B) Answer any two of the following.

10

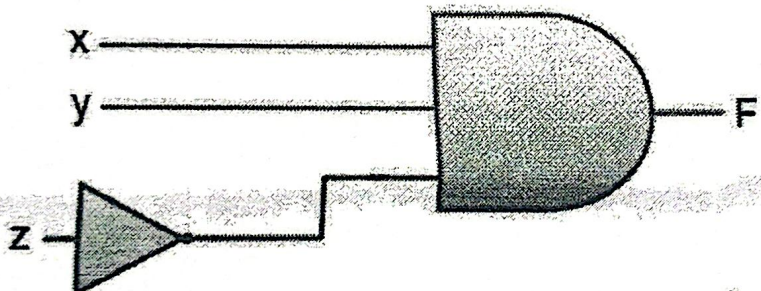
1. Name the gates used in the following Circuit Diagram. Write the value of W, X, Y and Z:



2. Solve the following:

- $(100)_2 - (11)_2 = (?)_2$
- $(1111)_2 + (1001)_2 = (?)_2$
- $(101)_2 - (1)_2 = (?)_2$
- $(101101)_2 - (101)_2 = (?)_2$
- $(111)_2 + (111)_2 + (111)_2 = (?)_2$

3. With reference to the circuit diagram given below, what will be the value of Expression F if



- $x = 1, y = 1, z = 1$
- $x = 0, y = 0, z = 0$
- $x = 1, y = 0, z = 1$